SLV-ED15/ED25/ED33/ED39/ED55/ED66/ED85/ED88/ED89/ED95/EZ11/EZ22/EZ44/EZ66/EZ77

RMT-V296/V296A/V296B/V298/V298A/V298B/V298C/V298D

SERVICE MANUAL

African Model
SLV-ED39AF/ED89AF

Australian Model
SLV-EZ11AZ/EZ22AZ/EZ44AZ/EZ66AZ/EZ77AS

E Model
SLV-ED15PS/ED25PS/ED55PS/ED85PS/ED95M1/ED95MN

ME Model
SLV-ED33ME/ED33SG/ED66ME/ED66SG/ED88ME/ED88SG

Middle East Model
SLV-ED33MJ/ED66MJ/ED88MJ

New Zealand Model
SLV-EZ77NZ

Thai Model
SLV-ED25TH/ED85TH/ED95TH

Photo: SLV-ED89AF

S MECHANISM

Hi-Fi

G-CODE

- **Refer to the SERVICE MANUAL of VHS MECHANICAL ADJUSTMENTS VI for MECHANICAL ADJUSTMENTS. (9-921-647-11)**

* The abbreviations of ED15/ED25/ED33/ED39/ED55/ED66/ED85/ED88/ED89/ED95/EZ11/EZ22/EZ44/EZ66 and EZ77 contained in this service manual are indicated when these models are common to all their corresponding models as given below.

Abbreviated model name	ED15	ED25	ED33	ED39	ED55	ED66	ED85	ED88	ED89	ED95	EZ11	EZ22	EZ44	EZ66	EZ77
All model names SLV-	ED15PS	ED25PS ED25TH	ED33ME ED33MJ ED33SG	ED39AF	ED55PS	ED66ME ED66MJ ED66SG	ED85PS ED85TH	ED88ME ED88MJ ED88SG	ED89AF	ED95MI ED95MN ED95TH	EZ11AZ	EZ22AZ	EZ44AZ	EZ66AZ	EZ77AS EZ77NZ

VHS VIDEO CASSETTE RECORDER

SONY®

SPECIFICATIONS

System

Color system
- ED15/ED25/ED35/ED55/ ED66/ED85/ED88/ED95: PAL, MESECAM, NTSC 3.58, NTSC 4.43
- ED39/ED89: PAL, SECAM, MESECAM, NTSC 3.58, NTSC 4.43
- EZ11/EZ22/EZ44/EZ66/EZ77: PAL, NTSC 4.43

TV system
- ED15/ED25/ED35/ED55/ED66/ ED85/ED88/ED95: MN, TH: B/G, D/K, I
- ED95MI: B/G, D/K, I, M
- EZ11/EZ22/EZ44/EZ66/EZ77: B/G

Channel coverage
- ED15/ED25/ED35/ED39/ED55/ ED66/ED85/ED88/ED89/ED95:
  B/G: VHF E2 to E12/UHF E21 to E69/ CATV S01 to S05, S1 to S41
  D/K: VHF R1 to R12/UHF R21 to R69
  I: VHF SA4 to SA13/UHF B21 to B69/ CATV S01 to S05, S1 to S41
- ED95MI:
  M: VHF A2 to A13/UHF A14 to A69/ CATV A-8 to A-1, A to W, W+1 to W+ 84
- EZ11/EZ22/EZ44/EZ66 (COUNTRY is set to AUS), EZ77AS:
  VHF AS0 to AS12, AS5A, AS9A
  UHF AS28 to AS69
  CATV S01 to S05, S1 to S41
- EZ11/EZ22/EZ44/EZ66 (COUNTRY is set to NZ), EZ77NZ:
  VHF NZ1 to NZ11
  UHF E21 to E69
  CATV S01 to S05, S1 to S41

RF output signal
- ED15/ED25/ED35/ED39/ED55/ED66/ ED85/ED88/ED89/ED95/EZ77NZ: UHF channels 21 to 69
- EZ11/EZ22/EZ44/EZ66/EZ77AS: UHF channels 28 to 69

Aerial out
- 75-ohm asymmetrical aerial socket

Inputs and outputs

LINE-1 IN
- VIDEO IN, phono jack (1)
  Input signal: 1 Vp-p, 75 ohms, unbalanced, sync negative
- AUDIO IN (MONO), phono jack (1) (ED15/ED25/ED33/ED39/ED55/ED66/ EZ11/EZ22/EZ44)
- AUDIO IN, phono jack (2) (ED85/ED88/ ED89/ED95/EZ66/EZ77)
  Input level: 327 mVrms
  Input impedance: more than 47 kilohms

LINE-2 IN (ED55/ED66/ED88/ED89/ED95/ EZ66/EZ77)
- VIDEO IN, phono jack (1)
  Input signal: 1Vp-p, 75 ohms, unbalanced, sync negative
- AUDIO IN (MONO), phono jack (2) (ED55/ED66)
- AUDIO IN, phono jack (2) (ED88/ED89/ ED95/EZ66/EZ77)
  Input level: 327mVrms
  Input impedane: more than 47 kilohms

LINE-3 IN (SAT IN/STB IN) (ED88/ED89/ED95: MN, TH/EZ77)
- VIDEO IN, phono jack (1)
  Input signal: 1Vp-p, 75 ohms, unbalanced, sync negative
- AUDIO IN, phono jack (2)
  Input level: 327mVrms
  Input impedane: more than 47 kilohms

LINE-1 OUT
- VIDEO OUT, phono jack (1)
  Output signal: 1 Vp-p, 75 ohms, unbalanced, sync negative
- AUDIO OUT (MONO), phono jack (1) (ED15/ED25/ED33/ED39/EZ11/EZ22)
- AUDIO OUT (MONO), phono jack (2) (ED55/ED66/EZ44)
- AUDIO OUT, phono jack (2) (ED85/ED88/ ED89/ED95/EZ66/EZ77)
  Standard output: 327 mVrms
  Load impedance: 47 kilohms
  Output impedance: less than 10 kilohms

LINE-2 OUT (AUDIO) (ED85/ED88/ED89/ ED95/EZ66/EZ77)
- AUDIO OUT, phono jack (2)
  Standard output: 327 mVrms
  Load impedance; 47 kilohms
  Output impedance: less than 10 kilohms

General

Power requirements
- 110 - 240 V AC, 50/60 Hz (ED15/ED25/ ED33/ED39/ED55/ED66/ED85/ED88/ ED89/ED95)
- 220-240 V AC, 50 Hz (EZ11/EZ22/EZ44/ EZ66/EZ77)

Power consumption
- 15W (ED15/ED25/ED33/ED39/ED55/ ED66/EZ11/EZ22/EZ44)
- 16W (ED85/ED88/ED89/EZ66)
- 18W(ED95/EZ77)

Operating temperature
- 5 ˚C to 40 ˚C

Storage temperature
- –20 ˚C to 60 ˚C

Dimensions
- Approx. 430 × 97 × 288 mm (w/h/d) including projecting parts and controls

Mass
- Approx. 4.1 kg:

Supplied accessories

Remote commander (1)
R6 (size AA) batteries (2)
Aerial cable (1)
Plug adaptor (1) (ED33: ME, MJ/ED39/ED66: ME, MJ/ED88: ME, MJ/ED89)

Design and specifications are subject to change without notice.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are “pinched” or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

• **Feature Difference**

SLV- / FEATURE	ED15	ED25	ED33	ED39	ED55	ED66	ED85	ED88	ED89	ED95 MN, TH	ED95 MI
HEAD/CH	2/2	2/2	2/2	2/2	4/4	4/4	4/6	4/6	4/6	4/6	4/6
NTSC (3.58) (REC/PB)	○/○	○/○	○/○	○/○	○/○	○/○	○/○	○/○	○/○	○/○	○/○
(4.43) (REC/PB)	○/○	○/○	○/○	○/○	○/○	○/○	○/○	○/○	○/○	○/○	○/○
SECAM (REC/PB)	×/×	×/×	×/×	×/○	×/×	×/×	×/×	×/×	×/○	×/×	×/×
ME-SECAM (REC/PB)	○/○	○/○	○/○	○/○	○/○	○/○	○/○	○/○	○/○	○/○	○/○
REC (NTSC) (SP/EP)	○	○	○	○	○	○	○	○	○	○	○
(PAL) (SP/LP)	○	○	○	○	○	○	○	○	○	○	○
RCA REAR LINE INPUT	2pin (B.Y)	2pin (B.Y)	2pin (B.Y)	2pin (B.Y)	2pin (B.Y)	2pin (B.Y)	3pin (R.W.Y)	3pin (R.W.Y)	3pin (R.W.Y)	3pin (R.W.Y)	3pin (R.W.Y)
RCA REAR LINE OUTPUT	2pin (B.Y)	2pin (B.Y)	2pin (B.Y)	2pin (B.Y)	3pin (B.B.Y)	3pin (B.B.Y)	3pin (R.W.Y)	3pin (R.W.Y)	3pin (R.W.Y)	3pin (R.W.Y)	3pin (R.W.Y)
RCA FRONT LINE INPUT	×	×	×	×	3pin (Y.B.B)	3pin (Y.B.B)	×	3pin (Y.W.R)	3pin (Y.W.R)	3pin (Y.W.R)	3pin (Y.W.R)
ADDITIONAL REAR INPUT (SAT IN)	×	×	×	×	×	×	×	○	○	○	×
ADDITIONAL REAR OUTPU (AUDIO OUT)	×	×	×	×	×	×	○	○	○	○	○
MODULATOR SYSTEM	G/K/I	G/K/I	G/K/I	G/K/I	G/K/I	G/K/I	G/K/I	G/K/I	G/K/I	G/K/I	G/K/I/M
REMOTE COMMANDER RMT-	V298A	V298A	V298A	V298A	V298A	V298B	V298A	V298B	V298C	V298B	V298D

SLV- / FEATURE	EZ11	EZ22	EZ44	EZ66	EZ77
HEAD/CH	2/2	2/2	4/4	4/6	4/6
NTSC (3.58) (REC/PB)	×/×	×/×	×/×	×/×	○/○
(4.43) (REC/PB)	×/○	×/○	×/○	×/○	○/○
SECAM (REC/PB)	×/×	×/×	×/×	×/×	×/×
ME-SECAM (REC/PB)	×/×	×/×	×/×	×/×	×/×
REC (NTSC) (SP/EP)	×	×	×	×	×
(PAL) (SP/LP)	○	○	○	○	○
RCA REAR LINE INPUT	2pin (B.Y)	2pin (B.Y)	2pin (B.Y)	3pin (R.W.Y)	3pin (R.W.Y)
RCA REAR LINE OUTPUT	2pin (B.Y)	2pin (B.Y)	3pin (B.B.Y)	3pin (R.W.Y)	3pin (R.W.Y)
RCA FRONT LINE INPUT	×	×	×	3pin (Y.W.R)	3pin (Y.W.R)
ADDITIONAL REAR INPUT (SAT IN)	×	×	×	×	○
ADDITIONAL REAR OUTPU (AUDIO OUT)	×	×	×	○	○
MODULATOR SYSTEM	G	G	G	G	G
REMOTE COMMANDER RMT-	V298	V296	V296	V296A	V296B

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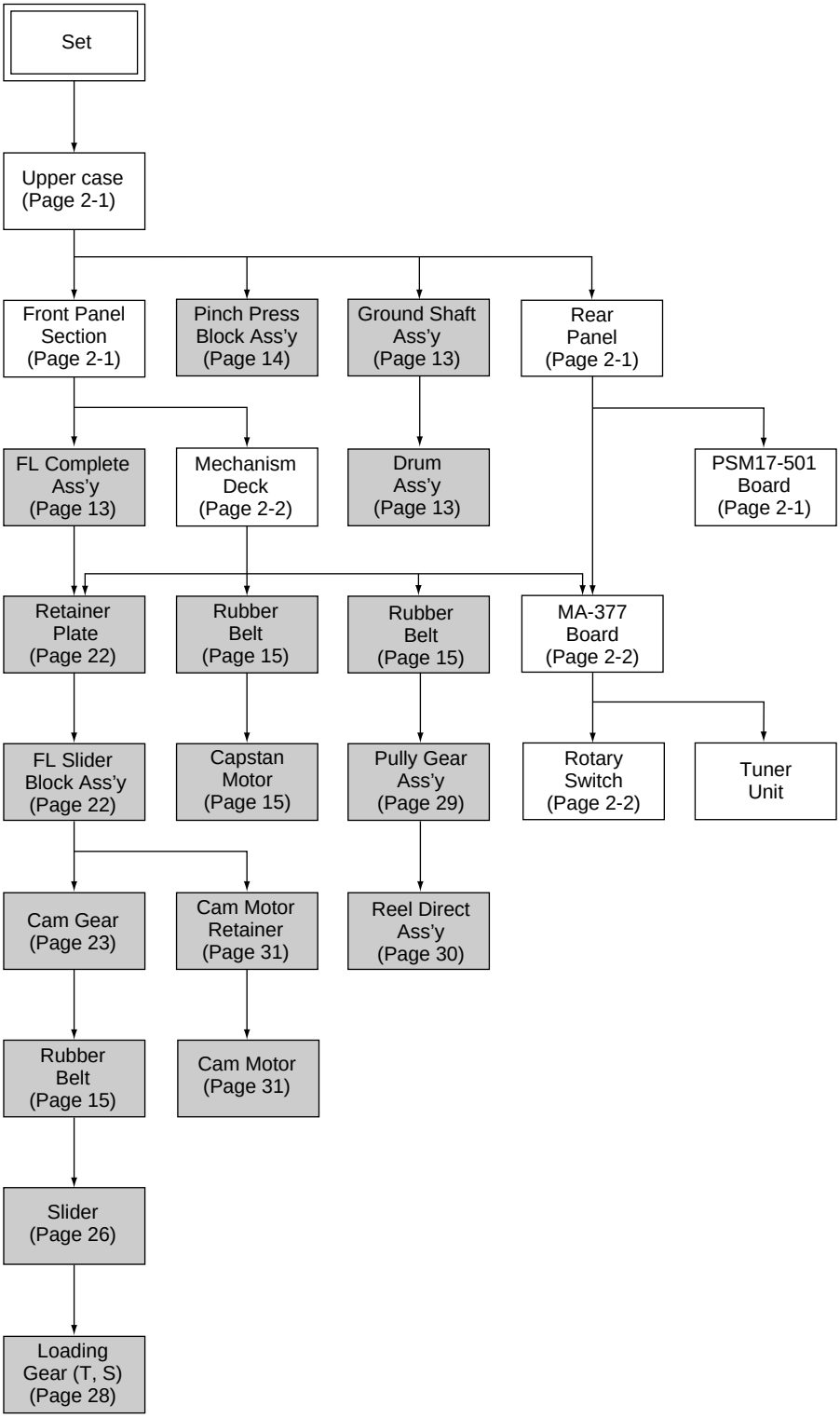
SERVICE NOTE

1. DISASSEMBLY

• This set can be disassembled in the order shown below.

Note: Pages in ▭ indicated pages in the SERVICE MANUAL.
Pages in ▭ indicated pages in the VHS MECHANICAL ADJUSTMENT MANUAL VI.


Set
Upper case (Page 2-1)
Front Panel Section (Page 2-1)
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Rubber Belt (Page 15)
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Rubber Belt (Page 15)
Cam Motor (Page 31)
Slider (Page 26)
Loading Gear (T, S) (Page 28)

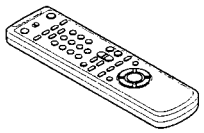
SECTION 1
GENERAL

This section is extracted from SLV-ED95MN/ED95TH instruction manual. (3-058-425-12)

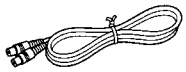
Step 1
Unpacking

Check that you have received the following items with the VCR:

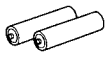
- Remote commander



- Aerial cable



- R6 (size AA) batteries



Checking your model name

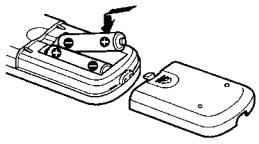
The instructions in this manual are for the 2 models: SLV-ED95MN and ED95TH. Check your model number by looking at the rotation panel of your VCR. SLV-95MN is the model used for illustration purpose. Any difference in operation is clearly indicated in the text, for example, "SLV-ED95TH only."

Step 2
Setting up the remote commander

Inserting the batteries

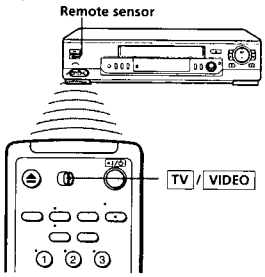
Insert two R6 (size AA) batteries by matching the + and – on the batteries to the diagram inside the battery compartment.

Insert the negative (–) end first, then push in and down until the positive (+) end clicks into position.



Using the remote commander

You can use this remote commander to operate this VCR and a Sony TV. Buttons on the remote commander marked with a dot (•) can be used to operate your Sony TV. If the TV does not have the ■ symbol near the remote sensor, this remote commander will not operate the TV.



To operate	Set TV/VIDEO to
the VCR	VIDEO and point at the remote sensor on the VCR
a Sony TV	TV and point at the remote sensor on the TV

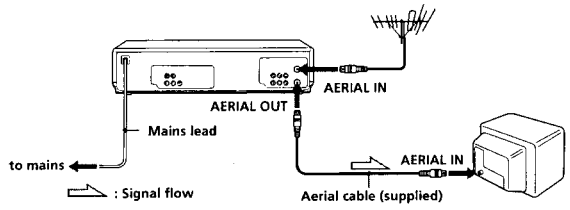
Notes

- The TV/VIDEO button selects an input source of the TV from either aerial in or line in. The button does not control this VCR.
- With normal use, the batteries should last about three to six months.
- If you do not use the remote commander for an extended period of time, remove the batteries to avoid possible damage from battery leakage.
- Do not use a new battery with an old one.
- Do not use different types of batteries.

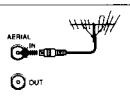
Step 3
Connecting the VCR

Connect the aerial to your VCR and TV as shown below to watch TV programmes and VCR pictures on your TV. In addition, if your TV has audio/video (A/V) input jacks, we recommend you connect the VCR to your TV using an audio/video cable to get a better picture and sound.

Connecting the aerial



1 Disconnect the aerial cable from your TV and connect it to AERIAL IN on the rear panel of the VCR.



2 Connect AERIAL OUT of the VCR and the aerial input of your TV using the supplied aerial cable.

3 Connect the mains lead to the mains.

Additional connections

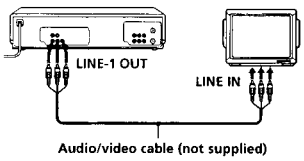
Note

- To listen to playback sounds in stereo, you must connect your VCR to a TV with audio/video input jacks or to a stereo system as shown below.

To a TV that has audio/video input jacks

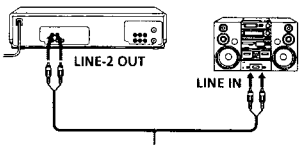
This additional connection improves picture and sound quality. Connect the TV as shown on the right.

If you want to use the Trinitron TV Synchro Play function (see page 22), this connection is necessary. (If your TV has two or more inputs, connect the audio/video cable to the VIDEO IN 1 jacks.)



To a stereo system

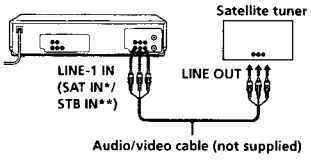
You can improve sound quality by connecting a stereo system as shown on the right.



To a satellite tuner

You can record programmes from other equipment such as a satellite tuner.

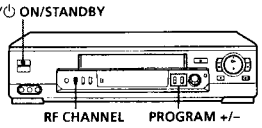
* Satellite Input
** Set Top Box Input



Step 4

Tuning your TV to the VCR

If you have connected your VCR to the TV using the audio/video cable, skip this step.



1 ON/STANDBY I/⏻

Press I/⏻ ON/STANDBY to turn on the VCR.

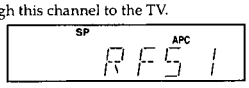
2 RF CHANNEL

Press RF CHANNEL on the VCR.

The factory-preset RF channel flashes in the display window for about three seconds.

Press RF CHANNEL again while the RF channel is flashing.

The VCR signal is output through this channel to the TV.



3

Turn on your TV and select a programme position for the VCR picture.

This channel will now be referred to as the video channel.

Some TV has the programme position, such as 0, that is reserved for a VCR. In this case, select that programme position for the VCR picture. Refer to the instruction manual of your TV for details.

4 RF CHANNEL

Press RF CHANNEL.

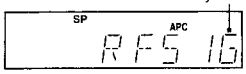
The TV system indicator appears in the display window.

Press PROGRAM +/– to select the correct TV system.

PROGRAM – +

If your TV system is	Select
B/G	G
I	I
D/K	K

Selected TV system



5

Tune the TV to the same channel as that shown in the display window so that the picture on the right appears on the TV screen.

Refer to your TV manual for tuning instructions.

If the picture does not appear clearly, see "To obtain a clear picture from the VCR" below.

6 RF CHANNEL

Press RF CHANNEL.

You have now tuned your TV to the VCR. From now on, whenever you want to play a tape, set the TV to the video channel.

To obtain a clear picture from the VCR

If the picture does not appear clearly in step 5 above, go to step 6 to finish this procedure once. Then start from step 2. After pressing RF CHANNEL twice in step 2 to display the RF channel, press PROGRAM +/– so that another RF channel appears. Then tune the TV to the new RF channel until a clear picture appears.

To set another RF channel number on the VCR, select a channel number that does not receive a broadcast signal in your area and is clear of interference from other channels.

If you cannot obtain a clear picture after performing this procedure, we recommend you connect the VCR and TV using the audio/video cable (see "To a TV that has audio/video input jacks" on page 7). If the same symptom persists, consult your nearest Sony dealer.

Note

- If you set the wrong TV system, you may have no sound or sound may be distorted (noisy sound).

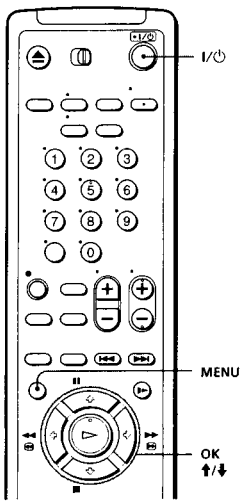
Step 5

Selecting a language

You can change the on-screen display language from English to Arabic.

Before you start...

- Turn on your TV and set it to the video channel.

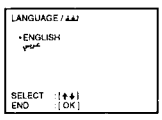


1 I/⏻

Press I/⏻ (on/standby) to turn on the VCR.

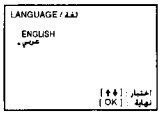
2 MENU

Press MENU, then press ↑/↓ to move the cursor (▶) to LANGUAGE and press OK.



3

Press ↑/↓ to select the desired language, then press OK.

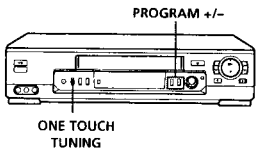


Step 6

Presetting channels

First, we recommend that you preset the receivable channels in your area using the One Touch Tuning function or the AUTO PRESET in the TUNER PRESET menu. Then, if some channels could not be preset automatically, set them manually; if there are any unwanted channels among the preset ones, you can disable the channels.

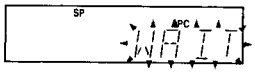
Presetting all receivable channels using the One Touch Tuning function



ONE TOUCH TUNING

Press and hold ONE TOUCH TUNING on the VCR for more than three seconds.

The VCR starts presetting the channels.



The WAIT indicator goes off when all receivable channels are preset.

To check if the channels are preset correctly

Set the TV to the video channel and press PROGRAM +/– on the VCR. If the TV screen changes to a different programme each time you press PROGRAM +/–, the channels are preset correctly.

If the sound is distorted or noisy, the VCR is set to a TV system different from your area's. Select the correct TV system and preset channels using the TUNER PRESET menu as shown on the next page.

Tip

- To stop the One Touch Tuning function, press ONE TOUCH TUNING or ■ STOP on the VCR during the setting.

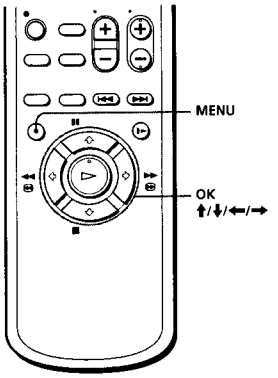
continued

Step 6: Presetting channels (continued)

Presetting all receivable channels automatically

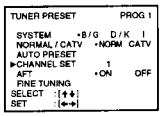
Before you start...

- Turn on the VCR and the TV.
- Set the TV to the video channel.



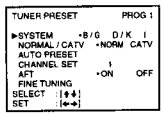
1 MENU

Press MENU, then press ↑/↓ to move the cursor (▶) to TUNER PRESET and press OK.



2

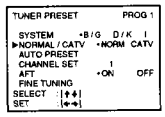
Press ↑/↓/←/→ to move the cursor (▶) to SYSTEM, then select B/G, D/K or I, whichever is applicable in your area. If SYSTEM is set to the wrong position, the sound will be distorted or noisy.



3

Press ↑/↓/←/→ to move the cursor (▶) to NORMAL/CATV, then select NORM.

To preset CATV channels, select CATV.

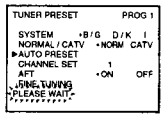


continued

4

Press ↑/↓ to move the cursor (▶) to AUTO PRESET, then press OK.

All receivable channels are preset in numerical sequence. When no more receivable channels can be found, presetting stops and the picture from the lowest numbered channel is displayed on the TV screen.

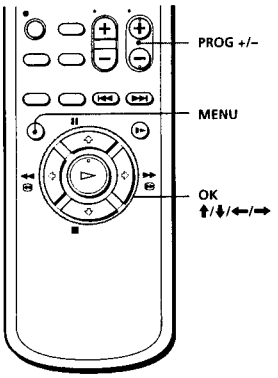


Step 6: Presetting channels (continued)

Presetting channels manually

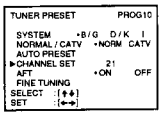
Before you start...

- Turn on the VCR and the TV.
- Set the TV to the video channel.



1 MENU

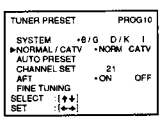
Press MENU, then press ↑/↓ to move the cursor (▶) to TUNER PRESET and press OK.



2

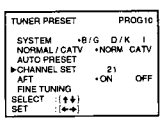
Press ↑/↓/←/→ to move the cursor (▶) to NORMAL/CATV, then select NORM.

To preset CATV channels, select CATV.



3

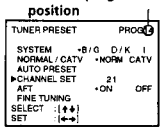
Press ↑/↓ to move the cursor (▶) to CHANNEL SET.



4 •PROG

Press PROG +/– to select the programme position.

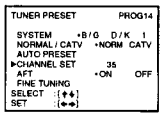
Selected programme position



5

Press ➡ repeatedly until the channel you want is displayed.
Pressing ⬅ goes back to the previous channels.

The channels are scanned in the following order:

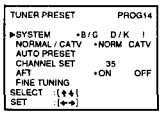


Channel coverage	System B/G	System D/K	System I
VHF	E2–E12	R1–R12	SA4–SA13
UHF	E21–E69	R21–R69	B21–B69
CATV (TV distribution)	S1–S41, S01–S05	–	S1–S41, S01–S05

If you know the number of the channel you want, press the programme number buttons. For example, for channel 5, first press "0" and then press "5."

6

If the TV sound is distorted or noisy, press ↑/↓/←/→ to move the cursor (▶) to SYSTEM, then select B/G, D/K or I whichever is applicable in your area.



7

To allocate another channel to another programme position, repeat steps 4 and 5.

8

Press OK.

continued

Step 6: Presetting channels (continued)

Disabling unwanted programme positions

After presetting channels, you can disable unused programme positions. The disabled positions will be skipped later when you press the PROG +/– buttons.

1 In step 5 on page 15, press programme number button "0" twice to display the number "0" beside CHANNEL SET.

2 Press OK.

If the picture is not clear

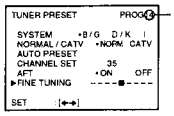
Normally, the Auto Fine Tuning (AFT) function automatically tunes in channels clearly. If, however, the picture is not clear, you may also use the manual tuning function.

1 Press PROG +/– to select the programme number for which you cannot obtain a clear picture.

2 Press MENU, then select TUNER PRESET and press OK.

3 Select FINE TUNING.

The fine tuning meter appears.



Selected programme position

4 Press ⬅/➡ to get a clearer picture, then press OK.

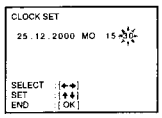
Note that the AFT (Auto Fine Tuning) setting switches to OFF.

Note

- The menu disappears automatically if you do not proceed for more than a few minutes.

Step 7: Setting the clock (continued)

4 Set the year, hour and minute in sequence, using ➡ to flash the item to be set, and ⬆/⬇ to select the digits.



5 Press OK to start the clock.

Tip

- To change the digits during setting, press ⬅ to return to the item to be changed, and select the digits using ⬆/⬇.

Note

- The menu disappears automatically if you do not proceed for more than a few minutes.

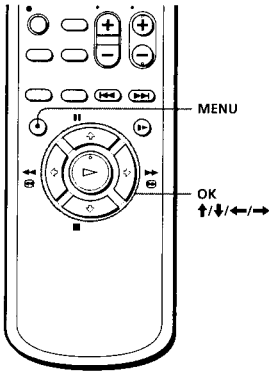
Step 7

Setting the clock

You must set the time and date on the VCR to be able to use the timer recording features properly.

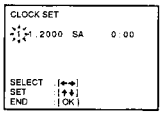
Before you start...

- Turn on the VCR and the TV.
- Set the TV to the video channel.



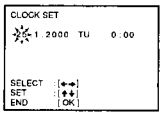
1 MENU

Press MENU, then press ⬆/⬇ to move the cursor (▶) to CLOCK SET and press OK.

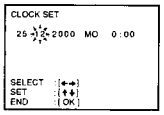


2 Press ⬆/⬇ to set the date.

The day of the week is set automatically.



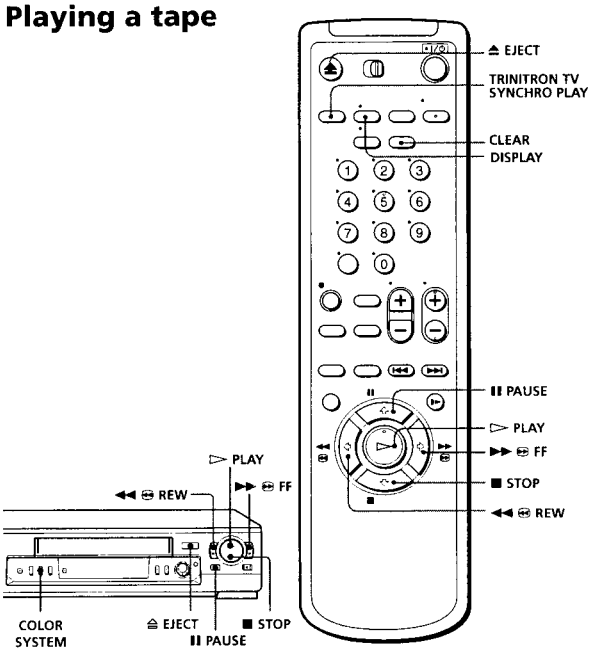
3 Press ➡ to flash the month and set the month using ⬆/⬇.



continued

Basic Operations

Playing a tape



1 Turn on your TV and set it to the video channel.

2 Insert a tape.

The VCR turns on and starts playing automatically if you insert a tape with its safety tab removed.

continued

3 Press ▷ PLAY.

When the tape reaches the end, it will rewind automatically.

Additional tasks

To	Press
Stop play	■ STOP
Pause play	❚❚ PAUSE
Resume play after pause	❚❚ PAUSE or ▷ PLAY
Fast-forward the tape	▶▶ FF during stop
Rewind the tape	◀◀ REW during stop
Eject the tape	⏏ EJECT

To set the colour system

If streaks appear during playback, press COLOR SYSTEM on the VCR to conform to the system that the tape was recorded in. (Normally, the colour system is correctly set whenever the tape is inserted.)

If your tape was recorded in	Press COLOR SYSTEM until the indication below appears in the display window.
PAL	PAL
MESECAM	PAL
NTSC	NTSC

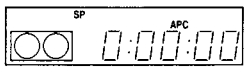
To play an NTSC-recorded tape

Set NTSC PB in the SET UP MENU according to the colour system of your TV. For details, see page 48.

If your TV is	Set NTSC PB to
PAL	ON PAL TV
NTSC 4.43	4.43
NTSC 3.58	3.58

To use the time counter

At the point on the tape that you want to find later, press CLEAR. The counter in the display window resets to "0:00:00." Search for the point afterwards by referring to the counter.



To display the counter on the TV screen, press DISPLAY.

Notes

- When you play back a tape recorded in the PAL or MESECAM colour system, streaks may appear even if the colour system setting is set to AUTO. If so, select the colour system, PAL or MESECAM in the PAL/MESECAM option of the SET UP MENU (see page 48 for details).
- The counter resets to "0:00:00" whenever a tape is reinserted.
- The counter stops counting when it comes to a portion with no recording.
- If a tape has portions recorded in both PAL and NTSC systems, the time counter reading will not be correct. This is due to the difference between the counting cycles of the two colour systems.
- Depending on your TV, the following may occur while playing an NTSC-recorded tape:
  - the picture is black and white
  - the picture shakes
  - no picture appears on the TV screen
  - black streaks appear horizontally on the TV screen
  - the colour density increases or decreases.
- Tapes recorded in the LP mode of NTSC system on other VCRs can be played back on this VCR, but the picture quality cannot be guaranteed.
- While setting the menu on the TV screen, you cannot use the ▷ PLAY, ❚❚ PAUSE, ▶▶ FF, ◀◀ REW or ■ STOP button. These buttons are used for menu operations.

continued

Turning on the VCR and TV, and starting playback automatically (Trinitron TV Synchro Play)

You can only use this function if your TV is made by Sony (Trinitron TV).

How to connect to use this function

Connect the VCR and TV with the audio/video cable (see "To a TV that has audio/video input jacks" on page 7). Be sure to connect the audio/video cable to the VIDEO IN 1 jacks on the TV if the TV has two inputs or more. The TV must be placed where it will respond to the remote commander while you are pointing it at the VCR.

Operation

Make sure that the TV's main power is on.

Press TRINITRON TV SYNCHRO PLAY and hold the remote commander in place for about two seconds.

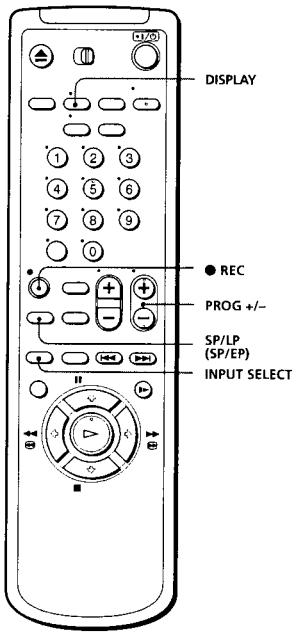
The VCR and TV turn on, and the TV is set to VCR reception. If there is a tape in the VCR, playback starts automatically.

Notes

- If the Trinitron TV Synchro Play function does not work properly:
  - Wait a few moments, and press the button again.
  - Replace both of the batteries with new ones, and press the button again.

  Note that this function may not operate some Sony TVs because of the remote commander's signal limitations.
- Do not press TRINITRON TV SYNCHRO PLAY while playing back a video tape. If you do so, the TV's input source will momentarily switch to the TV's tuner.

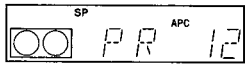
Recording TV programmes



1 Turn on your TV and set it to the video channel.

2 Insert a tape with its safety tab in place.

3 PROG +/– Press PROG +/– to select the programme position you want to record.

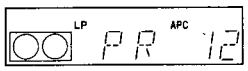


continued

4 SP/LP (SP/EP)

Press SP/LP (SP/EP) to select the tape speed, SP or LP.

LP (Long Play) provides recording time twice as long as SP (Standard Play), however, SP produces better picture and audio quality.



5 ●REC

Press ● REC to start recording.

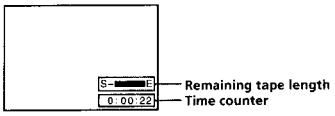
The recording indicator lights up red in the display window.

To stop recording

Press ■ STOP.

To check the remaining tape length

Press DISPLAY. The white bar indicates the approximate length of tape remaining.



To watch another TV programme while recording

1 If the TV is connected to the VCR using an audio/video cable, set the TV to TV input. If the TV is connected to the VCR using only the aerial cable, skip this step.

2 Select another programme position on the TV.

To save a recording

To prevent accidental erasure, break off the safety tab as illustrated. To record on the tape again, cover the tab hole with adhesive tape.

To record NTSC colour system programmes

NTSC colour signals can be recorded on this VCR from the LINE-1 IN (SAT IN/STB IN), LINE-2 IN and LINE-3 IN jacks only.

To select the line input, press INPUT SELECT or PROG +/– so that "L1", "L2" or "L3" appears in the display window.

For tape speed, select SP or EP in step 4.

EP provides recording time three times as long as SP, however, SP produces better picture and sound quality.

When playing back, the VCR automatically detects the tape speed.

Tips

- To select a programme position, you can use the programme number buttons on the remote commander. For two-digit numbers, press the –/-- (ten's digit) button followed by the programme number buttons.
- You can select a video source from the LINE-1 IN (SAT IN/STB IN), LINE-2 IN or LINE-3 IN jacks. Press INPUT SELECT or PROG +/– to display "L1", "L2" or "L3" in the display window.
- The display appears on the TV screen indicating information about the tape, but the information will not be recorded on the tape.
- If you do not want to watch TV while recording, you can turn off the TV.

Notes

- The display does not appear during still (pause) mode or slow-motion playback.
- It may take up to one minute for the VCR to calculate and display the remaining tape length after you press DISPLAY.
- The remaining tape length does not appear while playing or recording in NTSC system.

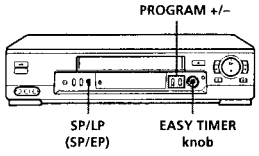
Recording TV programmes using the Easy Timer function

The Easy Timer function allows you to make a timer recording of a programme without turning on your TV. Set the recording timer to record only one programme that will be broadcast within the next 24 hours using the EASY TIMER knob. If the VCR clock has not been set, you can also set the clock before setting the timer recording.

Setting the Easy Timer

Before you start...

- Insert a tape with its safety tab in place. Make sure the tape is longer than the recording time.

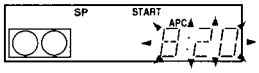


1 EASY TIMER

Press the EASY TIMER knob.

The START indicator appears in the display window.

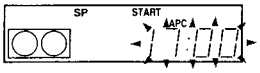
If the clock has not been set, "–:– –" appears. Go to step 2 in "Setting or changing the Easy Clock" on page 28.



2 EASY TIMER

Set the recording start time by turning the EASY TIMER knob clockwise or counterclockwise to increase or decrease the time by 15 minutes.

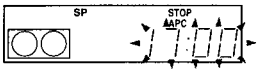
To increase or decrease the time by one minute, press PROGRAM +/–.



3 EASY TIMER

Press the EASY TIMER knob to confirm the start time setting.

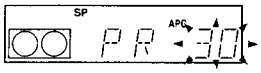
The STOP indicator appears.



4 EASY TIMER

Set the recording stop time in the same way as in step 2, then press the EASY TIMER knob.

A programme number flashes.

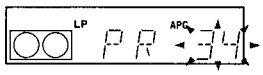


5 EASY TIMER

Turn the EASY TIMER knob clockwise or counterclockwise to select the programme you want to record.

To select the tape speed, press SP/LP (SP/EP).

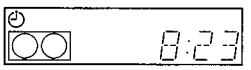
SP/LP (SP/EP)



6 EASY TIMER

Press the EASY TIMER knob to confirm the setting.

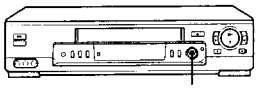
The ⏲ indicator appears in the display window and the VCR stands by for recording.



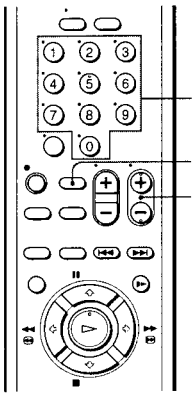
continued

Setting or changing the Easy Clock

When "–:– –" is displayed in the display window, the VCR clock has not been set. You need to set the clock using the Easy Clock function before setting the timer. You can also change the current time using the Easy Clock function.



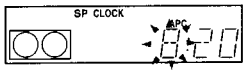
EASY TIMER knob



1 EASY TIMER

- When "–:– –" is displayed in the display window, press the EASY TIMER knob.
- To change the clock setting, press and hold the EASY TIMER knob on the VCR for more than three seconds.

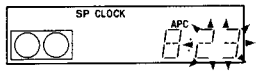
The CLOCK indicator and the current clock setting appear in the display window.



2 EASY TIMER

Set the current time using the EASY TIMER knob.

1 Turn the EASY TIMER knob clockwise or counterclockwise to enter the current hour.
2 Press the EASY TIMER knob to confirm the hour setting.
3 Turn the EASY TIMER knob to increase or decrease the minutes setting by a minute.



3 EASY TIMER

Press the EASY TIMER knob to confirm the clock setting.

The VCR enters the timer recording setting mode.

To continue the Easy Timer setting, go to step 2 in "Setting the Easy Timer" on page 26.

To quit the Easy Timer setting mode without changing any settings, press the EASY TIMER knob repeatedly until the ⏲ indicator appears in the display window.

To set the timer and clock setting using the remote commander

You can also use the remote commander to set the Easy Timer and Easy Clock. The operations on the VCR and the remote commander correspond as follows:

To	Do this on the VCR	Do this on the remote commander
Confirm the setting and go to the next setting	Press EASY TIMER knob	Press EASY TIMER
Change the time by 15 minutes (in START/STOP mode)	Turn EASY TIMER knob or hold PROGRAM +/– down	Hold PROG +/– down
Change the time by one minute (in START/STOP mode)	Press PROGRAM +/–	Press PROG +/–
Select the programme	Turn EASY TIMER knob or press PROGRAM +/–	Press PROG +/– or INPUT SELECT
Change the hour/minute by one hour/minute (in CLOCK mode)	Turn EASY TIMER knob or press PROGRAM +/–	Press PROG +/–

You can also use the programme number buttons to set the clock, start and stop times, and the programme you want to record. Just press the programme number buttons to enter the hours and minutes. For example:

- To set the clock to "8:20", press 0, 8, EASY TIMER, 2, 0 and EASY TIMER in sequence.
- To set the start or stop time to "8:20", press 0, 8, 2, 0 and EASY TIMER in sequence.

If you make a mistake, re-enter the correct digits before pressing EASY TIMER.

continued

To stop recording

To stop the VCR while recording, press ■ STOP.

To check or change the timer setting

Press the EASY TIMER knob repeatedly until the setting you want to check or change flashes. Then re-enter the new setting, if necessary. If you do not want to change any of the settings, press the EASY TIMER knob repeatedly until the ⏲ indicator appears in the display window.

You can also change the timer setting using the TIMER SET/CHECK menu. For details, see page 38.

To cancel the timer setting

To cancel the Easy Timer setting while doing the setting, press CLEAR on the remote commander or press PROGRAM + and – on the VCR at the same time.

To use the VCR after setting the timer

To use the VCR before a timer recording begins, just press I/⏻. The ⏲ indicator turns off and the VCR switches on. Remember to press I/⏻ to reset the VCR after using the VCR.

You can also do the following tasks while the VCR is recording:

- Reset the counter.
- Display tape information on the TV screen.
- Check the timer settings.
- Watch another TV programme.

To watch the recorded programme right after the Easy Timer recording

The SEARCH indicator starts flashing when the VCR finishes the Easy Timer recording. To watch the recorded programme, press the EASY TIMER knob. The VCR turns on, starts searching, then automatically starts playback from the beginning of the recording. For details, see page 42.

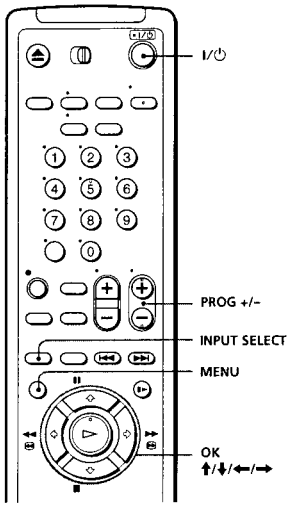
Tips

- To record from a source connected to LINE-1 IN (SAT IN/STB IN), LINE-2 IN or LINE-3 IN jacks, press INPUT SELECT or PROG +/– or turn the EASY TIMER knob to display "L1", "L2" or "L3" in the display window.
- To record NTSC signals, set the tape speed to SP or EP. To set to the EP mode, display "LP" in the display window.

Notes

- You cannot set the Easy Timer if eight programmes have already been set.
- You can set the timer for only one programme using the Easy Timer function. If you want to set the timer for other programmes, use the TIMER SET/CHECK menu. For details, see page 32.
- You cannot set the date using the Easy Timer function. Set the date using the CLOCK SET menu if you want to set the timer with the menu. For details, see page 17.
- The ⏲ indicator flashes in the display window when you complete the setting with no tape inserted.

Setting the timer manually



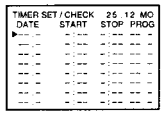
You can preset up to eight programmes at a time.

Before you start...

- Check that the VCR clock is set to the correct time.
- Insert a tape with its safety tab in place. Make sure the tape is longer than the total recording time.
- Turn on your TV and set it to the video channel.

1 MENU

Press MENU and select TIMER SET/CHECK, then press OK.

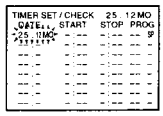


2

Set the date, start and stop times, programme position, and tape speed:

1 Press ➡ to flash each item in turn.
2 Press ↑/↓ to set each item.

To correct a setting, press ⬅ to return to that setting and reset.



To record the same programme every day or the same day every week, press ↓ while the date is flashing. For details, see "Daily/weekly recording" below.

To record from a source connected to the LINE-1 IN (SAT IN/STB IN), LINE-2 IN or LINE-3 IN jacks; press INPUT SELECT or PROG +/– to display "L1", "L2" or "L3" in the "PROG" position.

3

Press ➡ to confirm the setting.

The cursor (▶) appears at the beginning of the line. To enter another setting, move the cursor to the next line and repeat step 2.

4

Press OK.

5

Press I/⏻ to turn off the VCR.

The ⏲ indicator appears in the display window and the VCR stands by for recording.

To record from other equipment, leave the connected equipment switched on.

To stop recording

To stop the VCR while recording, press ■ STOP.

Daily/weekly recording

In step 2 above, press ↓ to select the recording pattern. Each time you press ↓, the indication changes as shown below. Press ↑ to change the indication in reverse order.

the current date → SU-SA (Sunday to Saturday) → MO-SA (Monday to Saturday) → MO-FR (Monday to Friday) → EVERY SA ..... → EVERY MO → EVERY SU → 1 month later → (dates count down) → the current date

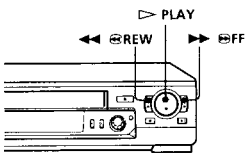
Tips

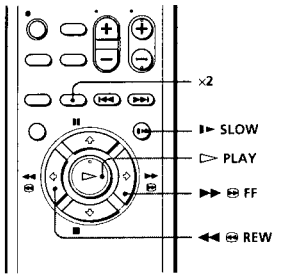
- To set the programme position, you can also use the PROG +/– or programme number buttons.
- To set the tape speed, you can also use SP/LP (SP/EP) button.
- To record NTSC signals, set the tape speed to SP or EP. To set to the EP mode, display "LP" in the tape speed position.

Note

- The ⏲ indicator flashes in the display window when you press I/⏻ with no tape inserted.

Playing/searching at various speeds





Playback options	Operation
View the picture during fast-forward or rewind	During fast-forward, hold ▶▶ FF down. During rewind, hold ◀◀ REW down.
Play at high speed	• During playback, press ▶▶ FF or ◀◀ REW on the remote commander. • During playback, hold ▶▶ FF or ◀◀ REW down. When you release the button, normal playback resumes.
Play at twice the normal speed	During playback or pause, press ×2.
Play in slow motion	During playback or pause, press ▮▶ SLOW.
Play frame by frame	During pause, press ▶▶ FF or ◀◀ REW on the remote commander. Hold the button down to play one frame each second.
Rewind and start play	During stop, press ▷ PLAY on the VCR while holding ◀◀ REW down on the VCR.

To resume normal playback

Press ▷ PLAY.

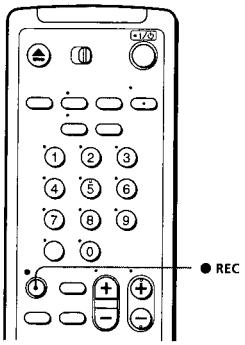
Tips

- Adjust the picture using TRACKING +/– on the VCR if:
  – streaks appear while playing in slow motion.
  – the picture shakes while pausing.
  To set tracking to the centre position, press both buttons (+/–) at the same time.
- If noise appears during pause or frame-by-frame playback, first switch to the slow motion playback, then adjust the picture using TRACKING +/– on the VCR.

Notes

- The playback sound is muted during these operations.
- In LP or EP mode, noise may appear or there may be no colour.
- The picture may have snow when playing at high speed in reverse.
- On-screen symbols may shake while playing or searching at various speeds.

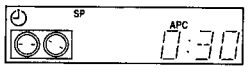
Setting the recording duration time



After starting recording in the normal way, you can have the VCR stop recording automatically after a specified duration.

1 While recording, press ● REC.

The ⏲ indicator appears in the display window.



2 Press ● REC repeatedly to set the duration.

Each press advances the time in increments of 30 minutes.

0:30 → 1:00 ----→ 5:30 → 6:00 → Normal recording

The tape counter decreases minute by minute to 0:00, then the VCR stops recording and turns off automatically.

To extend the duration

Press ● REC repeatedly to set to the new duration.

To cancel the duration

Press ● REC repeatedly until the ⏲ indicator turns off and the VCR returns to normal recording mode.

To stop recording

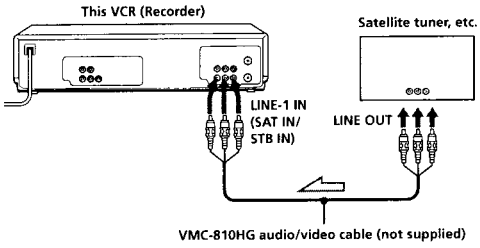
To stop the VCR while recording, press ■ STOP.

Synchronised recording

The Synchronised Recording feature enables you to record from the connected equipment such as a satellite tuner, a cable TV decoder or a TV that has a timer function. Once you set the timer on the other equipment, the VCR will start recording the programme synchronised with the timer.

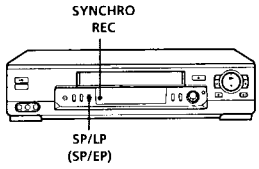
How to connect to use this function

Connect the other equipment to the LINE-1 IN (SAT IN/STB IN) jacks of this VCR.



: Signal flow

To prepare the Synchronised recording



1 Press INPUT SELECT or PROG +/– on the remote commander to display "L1" in the display window.

2 Set the timer on the equipment to the time of the programme you want to record, then turn it off.

3 Insert a tape with its safety tab in place. Make sure the tape is longer than the total recording time.

4 Press SP/LP (SP/EP) to select the tape speed (SP or LP for the PAL colour system, and SP or EP for the NTSC colour system).

5 Hold SYNCHRO REC down for more than two seconds.

The SYNCHRO REC button lights up and the VCR stands by for recording.

The VCR automatically turns on and starts recording when it receives video/audio signals from the connected equipment.

To cancel the Synchronised recording

Press SYNCHRO REC so that the button's light turns off.

To stop recording

Press ■ STOP while recording.

The VCR automatically stops recording when the tape reaches the end or when the other equipment stops transmitting the video/audio signals.

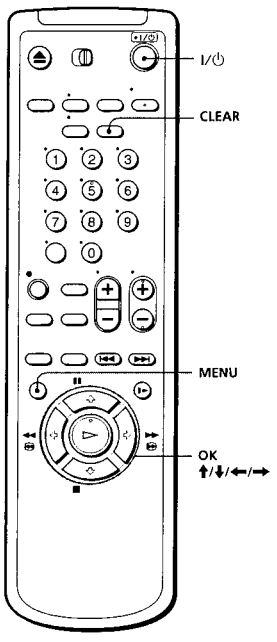
Notes

- Some TVs or other equipment automatically turn off in a certain time if you do not operate it after it turns on with the timer. In this case the Synchronised Recording also stops automatically.
- The Synchronised Recording starts and stops according to the signals from the connected equipment. Refer also to the instruction manual of the connected equipment for its timer function.
- Some equipment keeps transmitting signals even though the power is off. In this case, the Synchronised Recording feature does not work because the VCR will not be able to know when to start recording. To record the programme, set the timer on the VCR. If you use a satellite tuner or a cable TV decoder, make sure to turn it on. For details, see "Setting the timer manually".
- If the settings for timer recording and Synchronised Recording overlap, the programme that starts first has priority and the second programme starts recording only after the first programme has finished.

Checking/ changing/ cancelling timer settings

Before you start...

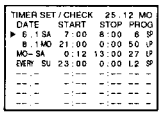
- Turn on your TV and set it to the video channel.



1 Press I/⏻ to turn on the VCR.

2 Press MENU, then select TIMER SET/CHECK:

- If you want to change or cancel a setting, go on to the next step.
- If you do not need to change or cancel the settings, press OK, then turn off the VCR to return to recording standby.



3 Press ↑/↓ to select the setting you want to change or cancel:

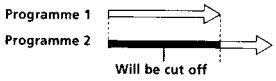
- To change the setting, press ←/→ to flash the item you want to change, and press ↑/↓ to reset it. Then, press → repeatedly until the cursor (▶) appears at the beginning of the line.
- To cancel the setting, press CLEAR.

4 Press OK.

If any timer settings remain, turn off the VCR to return to recording standby.

When the timer settings overlap

The programme that starts first has priority and the second programme starts recording only after the first programme has finished. If the programmes start at the same time, the programme listed first in the menu has priority.



Recording stereo and bilingual programmes

In ZWEITON (German stereo) system

This VCR automatically receives and records stereo and bilingual programmes based on the ZWEITON system. When a stereo or bilingual programme is received, the STEREO indicator appears in the display window.

To select bilingual sound while recording

Press AUDIO MONITOR to select the sound you want.

To listen to	On-screen display	Display window
Main	MAIN	STEREO
Sub	SUB	STEREO
Main and sub	MAIN/SUB	STEREO

In NICAM system

This VCR receives and records stereo and bilingual programmes based on the NICAM system (the NICAM indicator appears). When a stereo or bilingual programme is received, the STEREO indicator appears in the display window.

To record a NICAM programme, HIFI AUDIO in the SET UP MENU should be set to NICAM (initial setting). To check the menu setting, see page 48.

To select the sound while recording

Press AUDIO MONITOR to select the sound you want.

Stereo programme

To listen to	On-screen display	Display window
Stereo	STEREO	STEREO
Standard sound*	No indicator	No indicator

* Usually the mixed sound of left and right channels (monaural)

Bilingual programme

To listen to	On-screen display	Display window
Main	MAIN	STEREO
Sub	SUB	STEREO
Main and sub	MAIN/SUB	STEREO
Standard sound*	No indicator	No indicator

* Usually the main sound (monaural)

Selecting the sound while playing

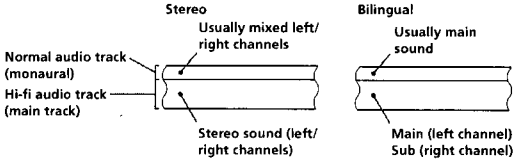
Press AUDIO MONITOR to select the sound you want.

To listen to	On-screen display	Display window
Stereo/main and sub (left and right channels)	STEREO	STEREO
Left channel/main	L CH	STEREO
Right channel/sub	R CH	STEREO
Standard sound*	No indicator	No indicator

* The mixed sound of left and right channels (monaural)

How sound is recorded on a video tape

The VCR records sounds onto two separate tracks. Hi-fi audio is recorded onto the main track along with the picture. Monaural sound is recorded onto the normal audio track along the edge of the tape.

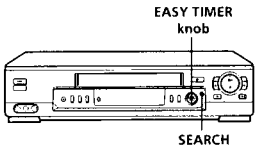


Notes

- To listen to playback sounds in stereo, you must use the AUDIO OUT connections.
- When you play a tape recorded in monaural, the sound is heard in monaural regardless of the AUDIO MONITOR setting.
- If the AUDIO MONITOR button does not function, check that AUDIO MIX in the SET UP MENU is set to OFF.
- If HIFI AUDIO is set to STD, the standard sound will be recorded on both the hi-fi and normal audio tracks. Pressing AUDIO MONITOR will not change the sound.

Searching the beginning of an Easy Timer recorded programme

If you record a programme using the Easy Timer function, you can easily find the beginning of the recording with this SEARCH function. The SEARCH indicator flashes when the VCR finishes the Easy Timer recording.



Press the EASY TIMER knob.

The VCR turns on, rewinds to the beginning of the recorded programme and starts playback automatically.

Tip

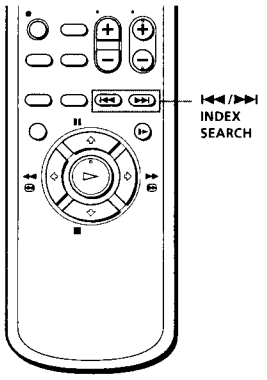
- To stop the flashing of the SEARCH indicator, first turn the VCR on, then press the SEARCH button. (Do not press any button at this point, otherwise this SEARCH mode will be cancelled.) To start the SEARCH function, press the SEARCH button once. If you press the SEARCH button repeatedly, you can enter the index search or Time Search mode (for details, see pages 44 and 45).

Notes

- This SEARCH function will be cancelled (the SEARCH indicator turns off) if:
  - The VCR starts recording other programmes.
  - You press ▷ PLAY, ▶▶ FF, ◀◀ REW or ⏏ EJECT button while the VCR is on.
- With this SEARCH function, you can find the beginning of a programme recorded using the Easy Timer function only.

Searching using the index function

The VCR marks the tape with an index signal at the point where each recording begins. Use these signals as references to find a specific recording. The VCR can search up to 99 index signals ahead of or behind the current position. You can either use the INDEX SEARCH buttons on the remote commander or the SEARCH button and EASY TIMER knob on the VCR.

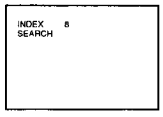


Using the INDEX SEARCH buttons on the remote commander

1 Insert an indexed tape into the VCR.

2 Press I◀◀ /▶▶I INDEX SEARCH repeatedly to specify how many index signals ahead or behind you want to search:

- To search ahead, press ▶▶I INDEX SEARCH.
- To search backwards, press I◀◀ INDEX SEARCH.

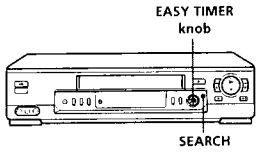


The VCR starts searching and the index number on the TV screen counts down to zero. The playback starts from the point about five seconds ahead of the specified index mark.

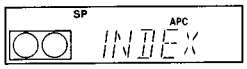
continued

Searching using the index function (continued)

Using the SEARCH button and EASY TIMER knob on the VCR

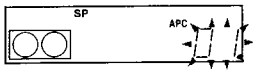


1 Press SEARCH on the VCR repeatedly until "INDEX" appears in the display window (the SEARCH indicator lights up).



2 Turn the EASY TIMER knob to specify how many index signals ahead or behind you want to search:

- To search ahead, turn the EASY TIMER knob clockwise.
- To search backwards, turn the EASY TIMER knob counterclockwise.



3 Press the EASY TIMER knob.

The VCR starts searching. The playback starts (the SEARCH indicator turns off) from the point about five seconds ahead of the specified index mark.

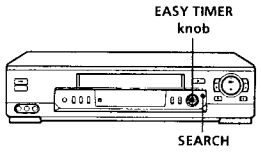
To stop searching

Press ■ STOP.

Note

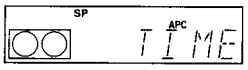
- No index signal will be added when recording starts from recording pause. However, an index signal will be marked if you change the channel during recording pause.

Searching using the Time Search function



You can easily find a specific point on a tape by using the Time Search function. For example, you can find a recorded portion 15 minutes ahead of or behind the current position of a tape by using the Time Search function.

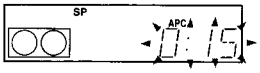
1 Press SEARCH repeatedly until "TIME" appears in the display window (the SEARCH indicator lights up).



2 Turn the EASY TIMER knob clockwise or counterclockwise to set the length of the time portion you want the VCR to fast-forward or rewind the tape. Each turn on the knob increases or decreases the duration by 15 minutes.

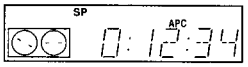
For example, if you want to watch a recorded portion 15 minutes ahead of the current position, turn the EASY TIMER knob once clockwise.

To change the time by one minute, press PROGRAM +/–.



3 Press the EASY TIMER knob.

The VCR starts searching and the tape counter starts counting until it reaches the specified point.



The VCR starts playback automatically when the tape counter reaches the specified point (the SEARCH indicator turns off).

To stop searching

Press ■ STOP.

Tip

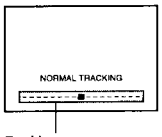
- The VCR can search up to three hours ahead of or behind the current position of a tape.

Adjusting the picture

Adjusting the tracking

Although the VCR automatically adjusts the tracking when playing a tape (the M indicator flashes in the display window, then goes off), distortion may occur if the tape was recorded in poor condition. If so, manually adjust the tracking.

Press the TRACKING +/– buttons on the VCR to display the tracking meter. The distortion should disappear as you press one of the two buttons (the M indicator lights up). To resume automatic tracking adjustment, eject the tape and reinsert it.

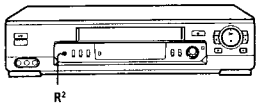


Tracking meter

About the R² (Reality Regenerator) function

The R² function automatically adjusts the picture to the most suitable quality during playback.

When playback starts, the R² function activates and the R² button lights up.

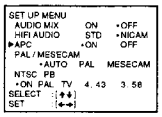


Each pressing of the button changes the effect and indication in the display window as follows:

REAL (status of playback started) → SOFT → DYNA (dynamic)

About the Adaptive Picture Control (APC) function

The Adaptive Picture Control (APC) function automatically improves recording and playback quality by adjusting the VCR to the condition of the video heads and tape. To maintain better picture quality, we recommend that you set APC to ON in the SET UP MENU (with the APC indicator in the display window lit).



APC playback

The APC function automatically works on all types of tapes, including rental tapes and tapes that were not recorded with APC.

APC recording

Whenever you insert a tape and first start recording, the VCR adjusts to the tape using the APC function (the APC indicator flashes rapidly). This adjustment is retained until the tape is ejected.

To deactivate the APC function

Press MENU and select SET UP MENU, then set APC to OFF. The APC indicator in the display window goes off.

Tip

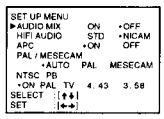
- To set the tracking to the centre position, press the TRACKING + and – buttons at the same time.

Note

- There is a delay of a few seconds before the VCR actually starts recording while the VCR analyses the tape. To avoid the delay, first set the VCR to recording pause (the APC indicator flashes slowly) and press ● REC to have the VCR analyse the tape (the APC indicator flashes rapidly). After the APC indicator stops flashing, press ❚❚ PAUSE to start recording immediately. If you press ❚❚ PAUSE before the APC indicator stops flashing, the APC function is cancelled.

Changing menu options

1 Press MENU, then select SET UP MENU.



2 Press ↑/↓ to select the option to change, then press ←/→ to change the setting.

3 Press OK to return to the original screen.

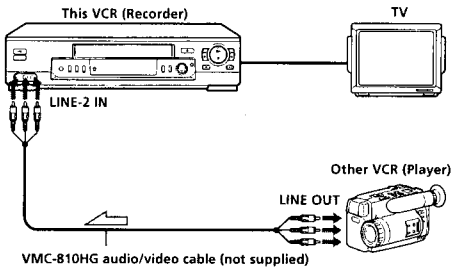
Menu choices

Initial settings are indicated in bold print.

Menu option	Set this option to
AUDIO MIX	ON to listen to the hi-fi and normal audio tracks at the same time. The AUDIO MONITOR button will not function. **OFF** to listen to hi-fi and normal audio tracks separately. Select the sound using the AUDIO MONITOR button.
HIFI AUDIO	STD to record standard sound on the hi-fi audio track. **NICAM** to record NICAM broadcasts on the hi-fi audio track. For details, see page 40.
APC	**ON** to switch on the APC (Adaptive Picture Control) function and improve picture quality. OFF to switch off APC.
PAL/MESECAM	**AUTO** to have the VCR automatically select the colour system for recording and playback. If the picture has no colour or unusual colours, set to PAL or MESECAM according to your local colour system.
NTSC PB	**ON PAL TV** to play back an NTSC-recorded tape on a PAL TV. 4.43 or 3.58 according to the colour system of your NTSC TV. For details, see page 20.

Connecting to a VCR or stereo system

How to connect to record on this VCR



: Signal flow

How to connect to a stereo system

Connect LINE-2 IN AUDIO on this VCR to the audio output jacks on the stereo system, using the RK-C510HG audio cable (not supplied).

Tips

- If the other VCR is a monaural type and connected to this VCR's LINE-2 IN jacks, connect the audio plug to the AUDIO L (white) jack. The sound is recorded on both right and left channels. When connecting to the AUDIO R (red) jack, the sound is recorded only on the right channel.
- You can also use the LINE-1 IN (SAT IN/STB IN) or LINE-3 IN jacks instead. If the other VCR is a monaural type, the sound is recorded only on the channel whose jack is connected to the audio plug. To record on both right and left channels, connect the audio plugs to the AUDIO R/L jacks using a VMC-910HG audio/video cable (not supplied).

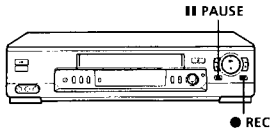
Notes

- Make sure you connect the plugs to the jacks of the same colour.
- If you connect this VCR to both the LINE IN and LINE OUT jacks of the other VCR, select the input correctly to prevent a humming noise.

Basic editing
(when recording on this VCR)

Before you start editing

- Turn on your TV and set it to the video channel.
- Press INPUT SELECT or PROG +/– to display "L1", "L2" or "L3" in the display window.
- Press SP/LP (SP/EP) to select the tape speed (SP or LP for the PAL system, and SP or EP for the NTSC system).



1 Insert a source tape with its safety tab removed into the other (playback) VCR. Search for the point to start playback and set it to playback pause.

2 Insert a tape with its safety tab in place into this (recording) VCR. Search for the point to start recording and press II PAUSE.

3 Press ● REC on this VCR and set it to recording pause.

4 To start editing, press the II PAUSE buttons on both VCRs at the same time.

To stop editing

Press the ■ STOP buttons on both VCRs.

Tips

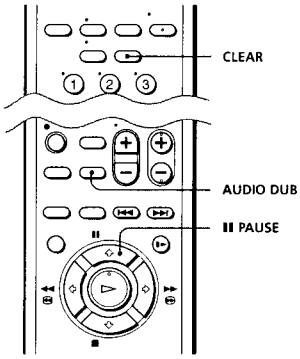
- To edit more precisely, press the II PAUSE buttons on the VCRs to release pause.
- To cut out unwanted scenes while editing, press II PAUSE on this VCR when an unwanted scene begins. When it ends, press II PAUSE again to resume recording.

Note

- If you start recording following the procedure above, the VCR will not start recording with the APC function. To record a tape with the APC function, press ● REC again during recording pause in step 3 so that the VCR analyses the tape. Then when you start recording in step 4, press II PAUSE after the APC indicator stops flashing. If you press II PAUSE before the APC indicator stops flashing, the APC function is cancelled.

Audio dubbing

This feature lets you record over the normal audio track. The monaural sound previously recorded is replaced while the original hi-fi sound remains unchanged. Use this feature to add commentary to a tape that you have recorded with a camcorder.



Before you start editing

- Turn on your TV and set it to the video channel.
- Press INPUT SELECT or PROG +/– to display "L1", "L2" or "L3" in the display window.

1 Insert a source tape into the stereo system (or the playback VCR). Search for the point to start playback and set it to playback pause.

2 Insert a prerecorded tape into this (recording) VCR. Search for the end of the section to be replaced and press II PAUSE.
Make sure that the tape has its safety tab in place.

3 Press CLEAR to reset the counter to "0:00:00."

4 Rewind the prerecorded tape to the beginning of the section to be replaced.
The VCR pauses.

5 Press AUDIO DUB.
The ⊖ indicator appears in the display window.

6 To start editing, press the II PAUSE buttons on this VCR and the stereo system (or other VCR) at the same time.
When the counter reaches "0:00:00", audio dubbing stops automatically.

To stop while editing

Press the ■ STOP buttons on this VCR and the stereo system (or other VCR).

To listen to both the hi-fi and normal audio

Set AUDIO MIX to ON in the SET UP MENU (page 48). Use this feature to listen to dubbed audio over the original hi-fi audio. When AUDIO MIX is set to ON, the AUDIO MONITOR button does not function. Remember to reset AUDIO MIX to OFF after playing the tape.

Sapphire tape cleaner

The unit incorporates a sapphire tape cleaner which cleans a video tape when it is loaded. This cleaner can prevent the video heads from contamination by removing dust or mold from a tape with the sapphire edge.

Head Condition Sensor

The Head Condition Sensor checks the video heads condition. If the heads are dirty, a message will instruct you to insert a video head cleaning cassette.

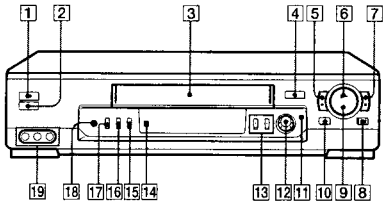
The VCR may temporarily switch to a different head and resume playback. To switch the heads, press ▷ PLAY while the "PUSH [PLAY] TO RESUME TEMPORARILY" message appears on the screen. Although playback will resume, the sound will be monaural. When playback is finished, be sure to clean the heads with a video head cleaning cassette.

Be sure to use the Sony T-25CLD, T-25CLW or E-25CLDR video head cleaning cassette. If these cleaning cassettes are not available in your area, have the heads cleaned at your nearest Sony service facility (a standard service charge will be required).

Index to parts and controls

Refer to the pages indicated in parentheses ( ) for details.

Front panel

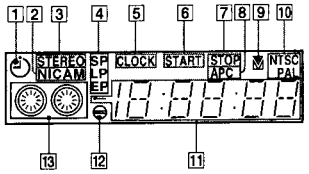


1 I/⏻ ON/STANDBY switch (8)
2 Remote sensor (5)
3 Tape compartment
4 ⏏ EJECT button (20)
5 ◀◀ ⏮ REW (rewind) button (20, 34)
6 ▷ PLAY button (20)
7 ▶▶ ⏭ FF (fast-forward) button (20, 34)
8 ● REC (record) button (24)
9 ■ STOP button (20)
10 ❚❚ PAUSE button (20)
11 SEARCH button/indicator (42, 44, 45)
12 EASY TIMER knob (26, 42, 44, 45)
13 PROGRAM/TRACKING +/– buttons (8, 46)
14 SYNCHRO REC button (36)
15 SP (Standard Play)/LP (Long Play)/EP (Extra Play) button (24)
16 COLOR SYSTEM button (20)
17 ONE TOUCH TUNING/RF (Radio Frequency) CHANNEL button (8, 11)
18 R² (Reality Regenerator) button (46)
19 LINE-2 IN VIDEO/AUDIO L/R jacks (49)

continued

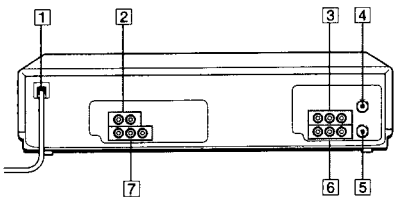
Index to parts and controls (continued)

Display window



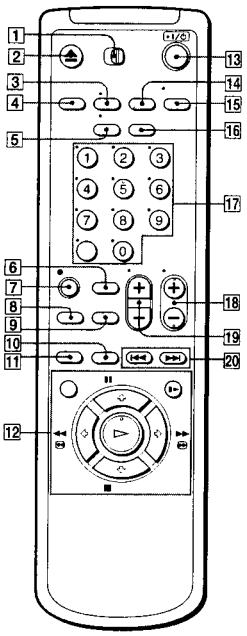
1 Timer indicator (27)
2 NICAM indicator (40)
3 STEREO indicator (40)
4 Tape speed indicator (24)
5 CLOCK indicator (28)
6 START indicator (26)
7 STOP indicator (26)
8 APC (Adaptive Picture Control) indicator (47)
9 Tracking indicator (46)
10 Colour system indicator (20)
11 Time counter/clock/line/programme/TV system indicator (8, 21, 23, 28, 50)
12 Audio dubbing indicator (51)
13 Tape/recording indicator (24)

Rear panel



1 Mains lead (6)
2 LINE-2 OUT AUDIO R/L jacks (7)
3 LINE-3 IN AUDIO R/L/VIDEO jacks (25)
4 AERIAL IN connector (6)
5 AERIAL OUT connector (6)
6 LINE-1 IN (SAT IN/STB IN) AUDIO R/L/VIDEO jacks (36)
7 LINE-1 OUT AUDIO R/L/VIDEO jacks (7)

Remote commander

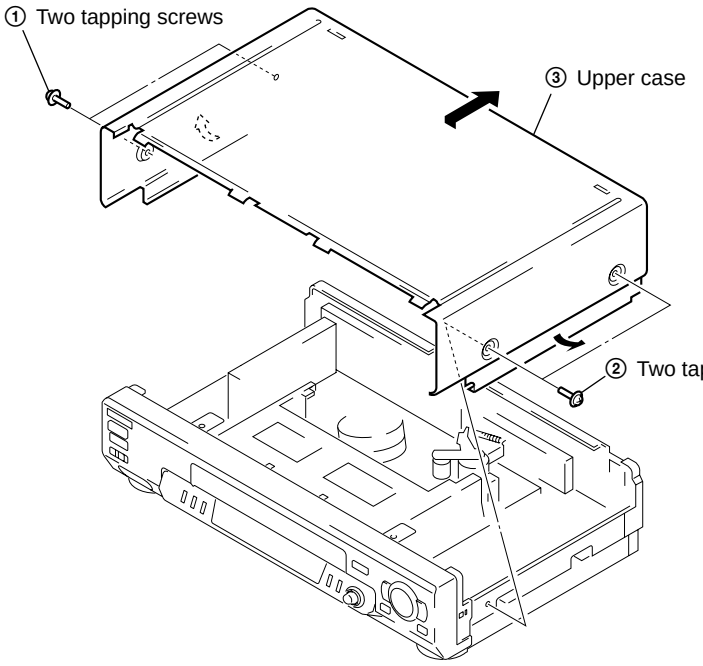


1 TV / VIDEO remote control switch (5)
2 ⏏ EJECT button (20)
3 DISPLAY button (24)
4 TRINITRON TV SYNCHRO PLAY button (22)
5 TV/VIDEO button *(for TV)* (5)
6 EASY TIMER button (29)
7 ● REC button (24, 35)
8 SP (Standard Play)/LP (Long Play)/EP (Extra Play) button (24)
9 AUDIO DUB (dubbing) button (51)
10 ×2 button (34)
11 INPUT SELECT button (25, 33)
12 Tape/menu operation buttons
MENU button (10, 48)
❚❚ PAUSE/↑ button (20)
■ STOP/↓ button (20)
◀◀ ⏮ REW (rewind)/⬅ button (20, 34)
▶▶ ⏭ FF (fast-forward)/➡ button (20, 34)
▷ PLAY/OK button (20)
I▸ SLOW button (34)
13 I/⏻ (on/standby) switch (33)
14 R² (Reality Regenerator) button (46)
15 AUDIO MONITOR button (40)
16 CLEAR button (21, 39)
17 Programme number /-/-- (ten's digit) buttons (29)
18 PROG (programme) +/– buttons (23)
19 VOL (volume) +/– buttons *(for TV)*
20 ⏮/⏭ INDEX SEARCH buttons (43)

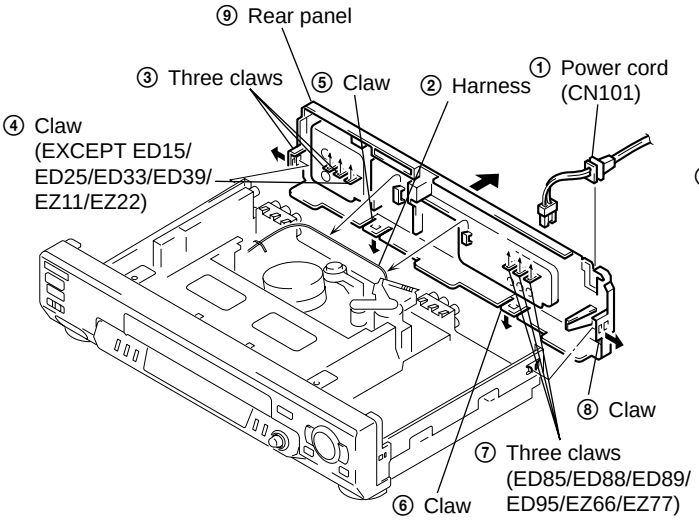
SECTION 2
DISASSEMBLY

Note: Follow the disassembly procedure in the numerical order given.

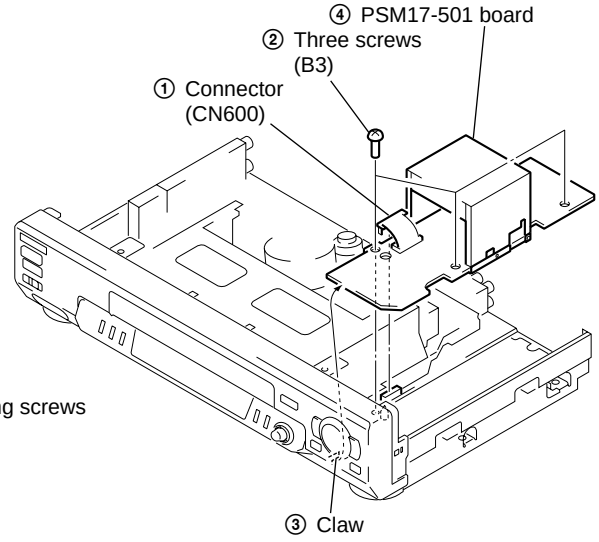
2-1. UPPER CASE REMOVAL



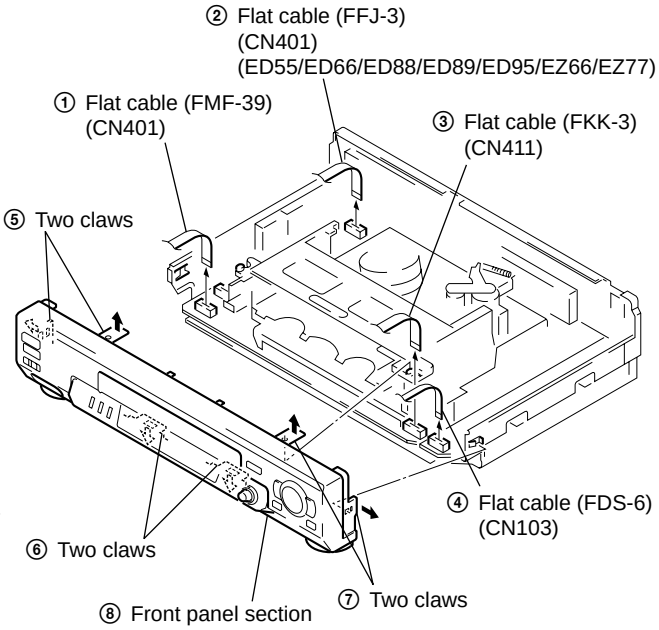
2-2. REAR PANEL REMOVAL



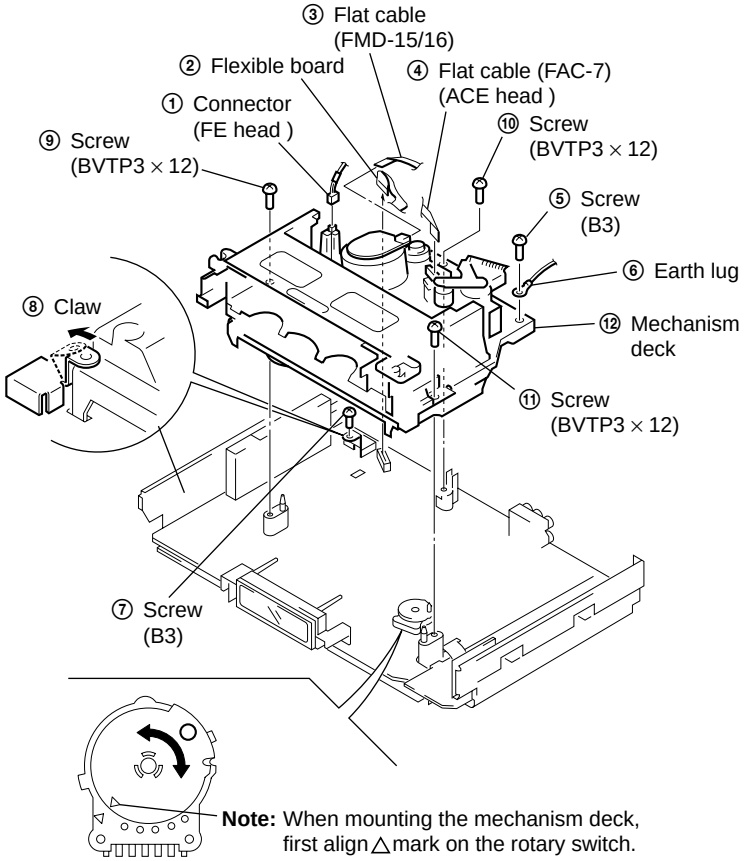
2-3. PSM17-501 BOARD REMOVAL



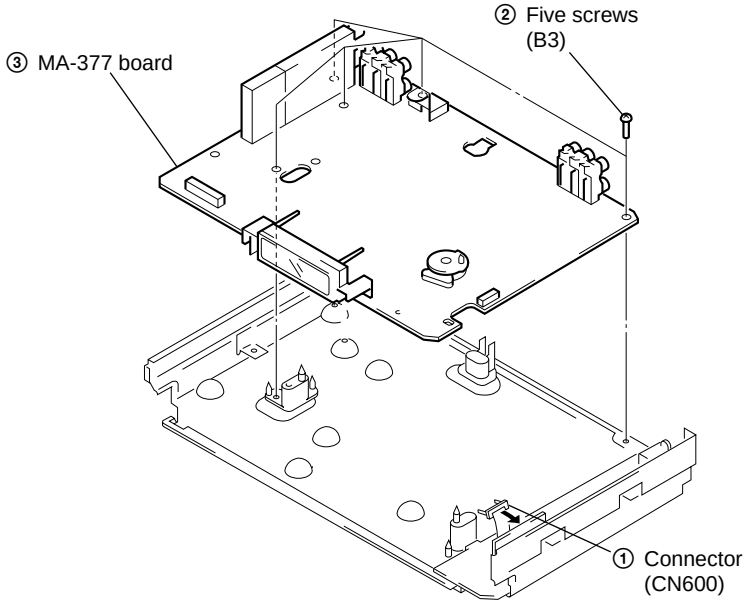
2-4. FRONT PANEL SECTION REMOVAL



2-5. MECHANISM DECK REMOVAL



2-6. MA-377 BOARD REMOVAL



2-7. INTERNAL VIEWS

Drum assembly (M901) (DZH-89D-R)
1-772-360-11 (ED15/ED25/ED33/ED39/EZ11/EZ22)
Drum assembly (M901) (DZH-0A1A/Z-RP)
8-848-048-51 (ED85/ED88/ED89/ED95/EZ66/EZ77)
Drum assembly (M901) (DZH-0A3A/Z-RP)
8-839-050-51 (ED55/ED66/EZ44)

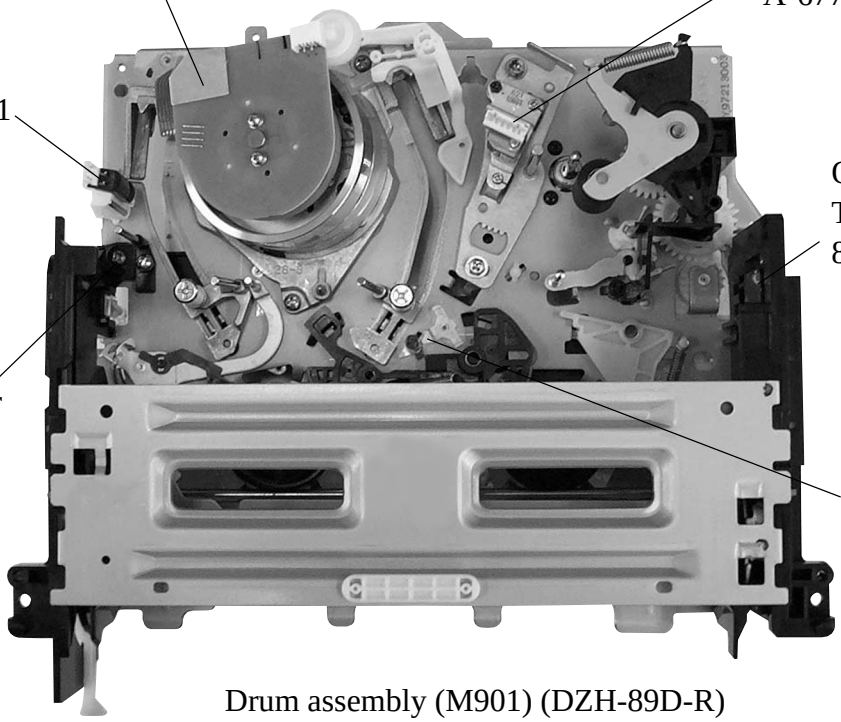
ACE head assembly
A-6775-791-A

FE head
1-500-144-11

Q001
Tape end sensor
8-729-043-84

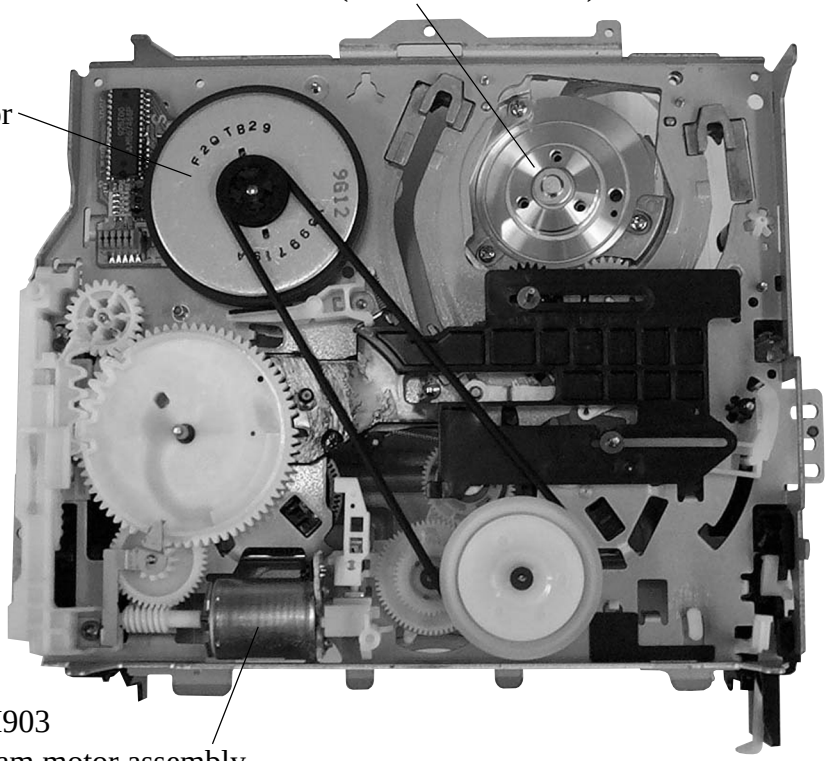
Q002
Tape top sensor
8-729-043-84

D001
Tape top/end LED
8-719-048-26



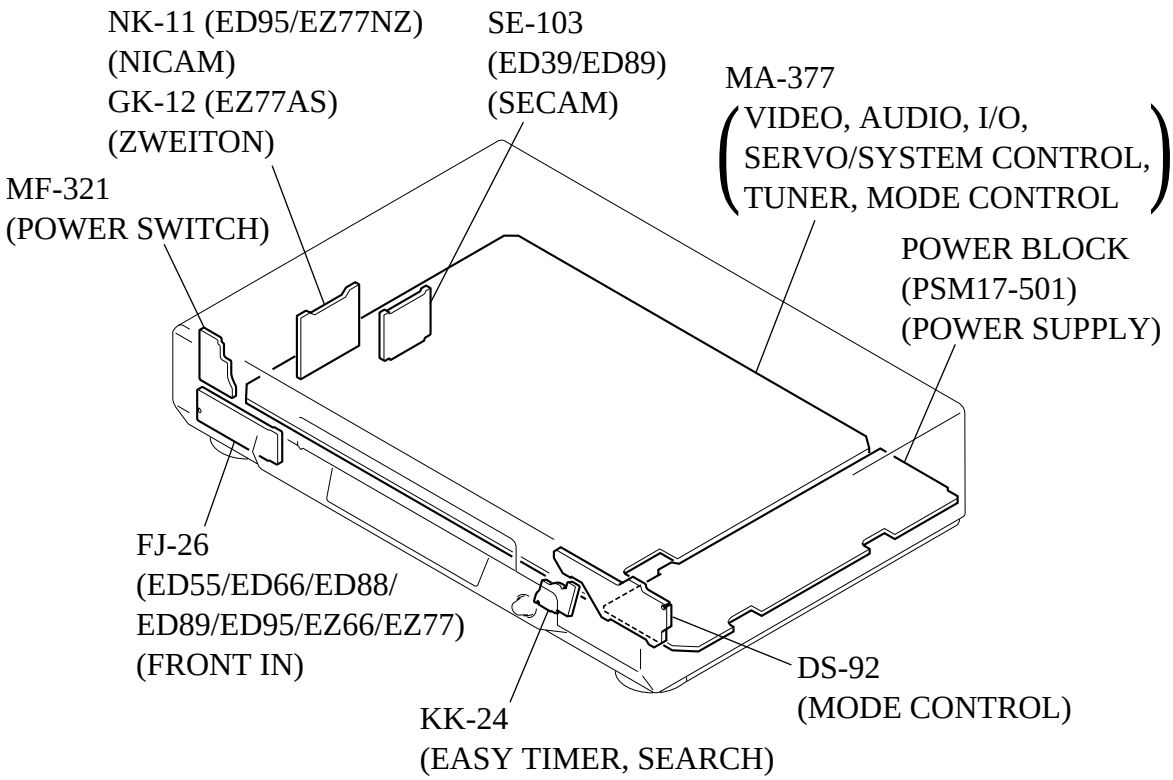
Drum assembly (M901) (DZH-89D-R)
1-772-360-11 (ED15/ED25/ED33/ED39/EZ11/EZ22)
Drum assembly (M901) (DZH-0A1A/Z-RP)
8-848-048-51 (ED85/ED88/ED89/ED95/EZ66/EZ77)
Drum assembly (M901) (DZH-0A3A/Z-RP)
8-839-050-51 (ED55/ED66/EZ44)

M902
Capstan motor
1-698-971-11



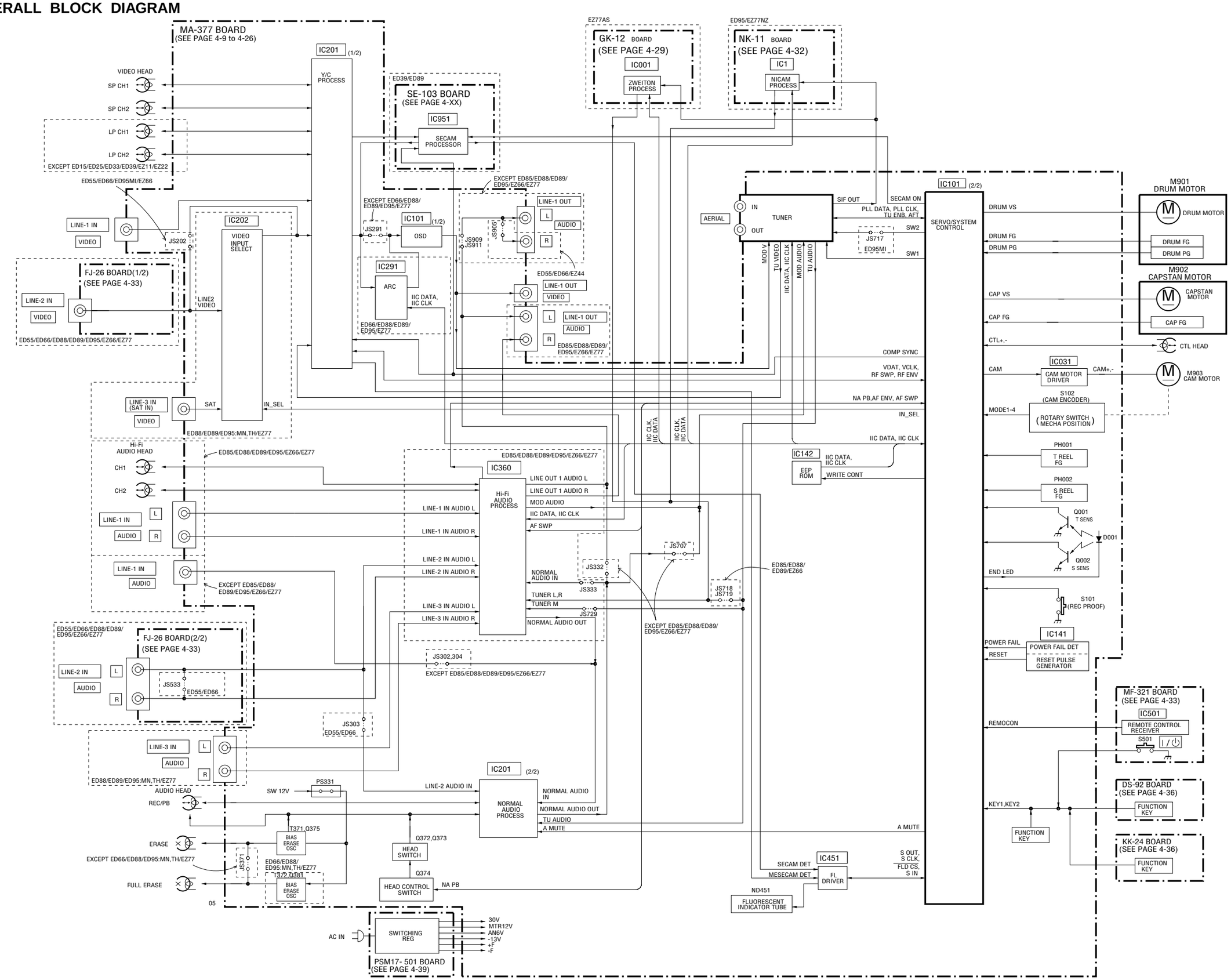
M903
Cam motor assembly
X-3947-577-1

2-8. CIRCUIT BOARDS LOCATION

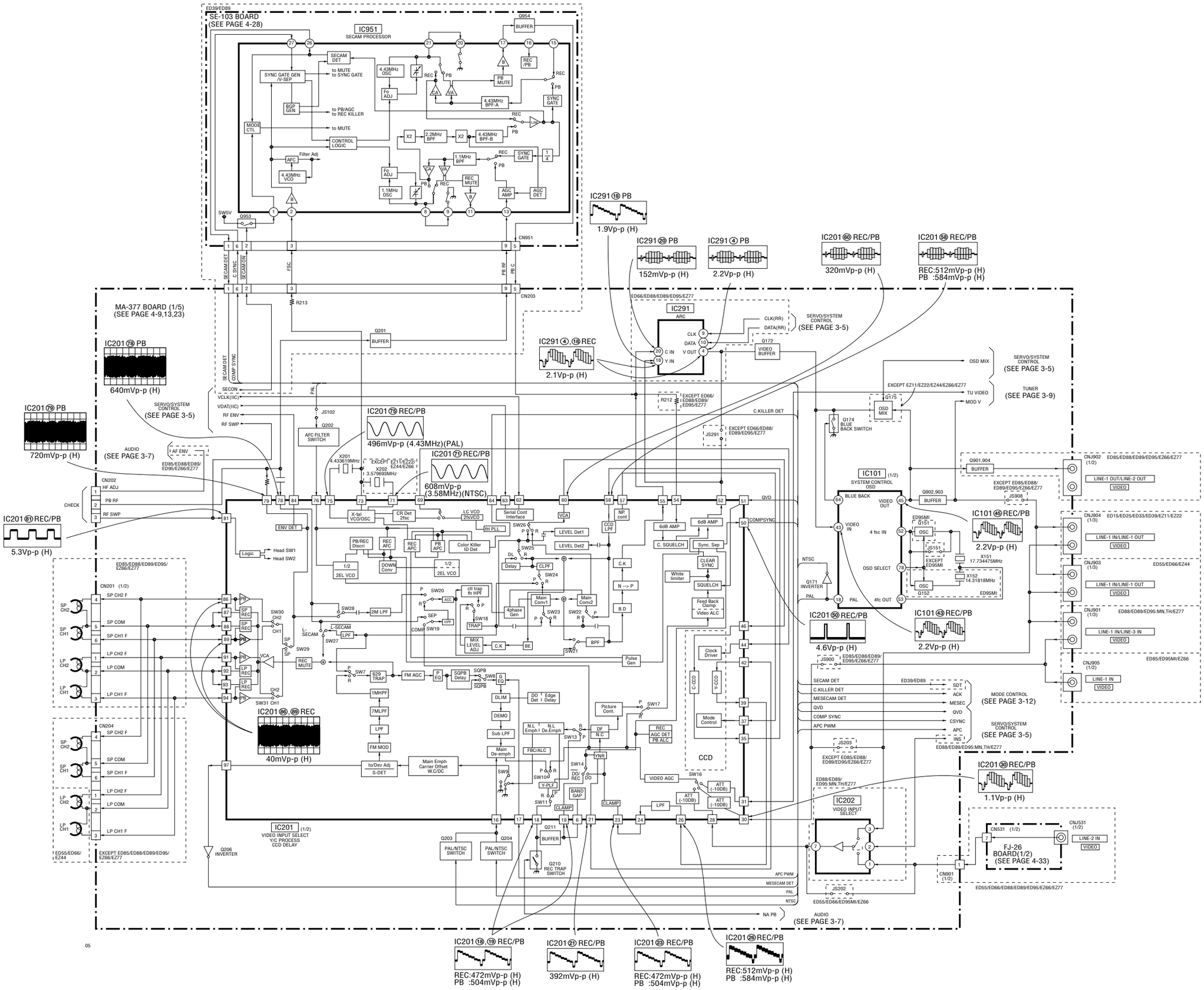


SECTION 3
BLOCK DIAGRAMS

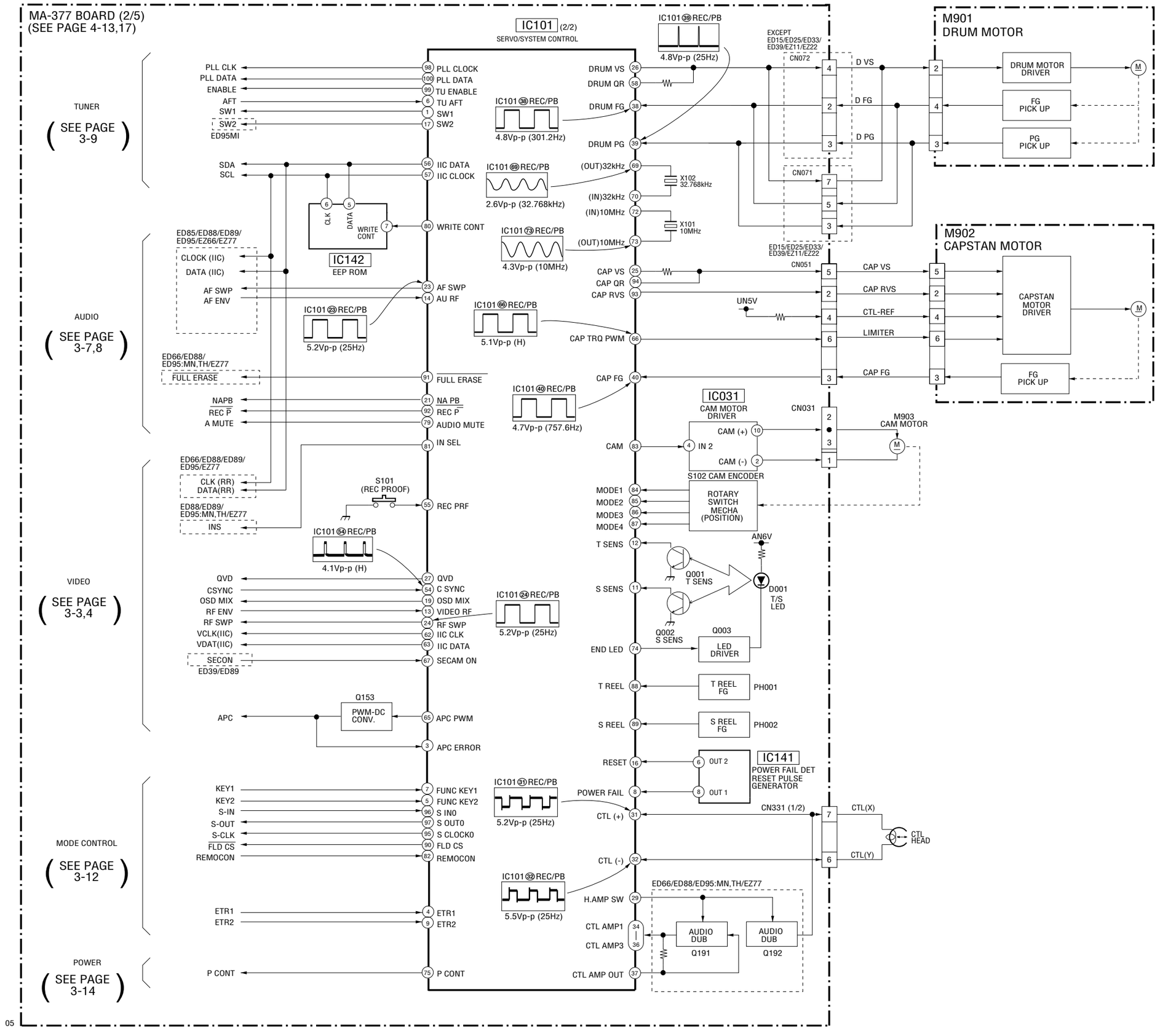
3-1. OVERALL BLOCK DIAGRAM



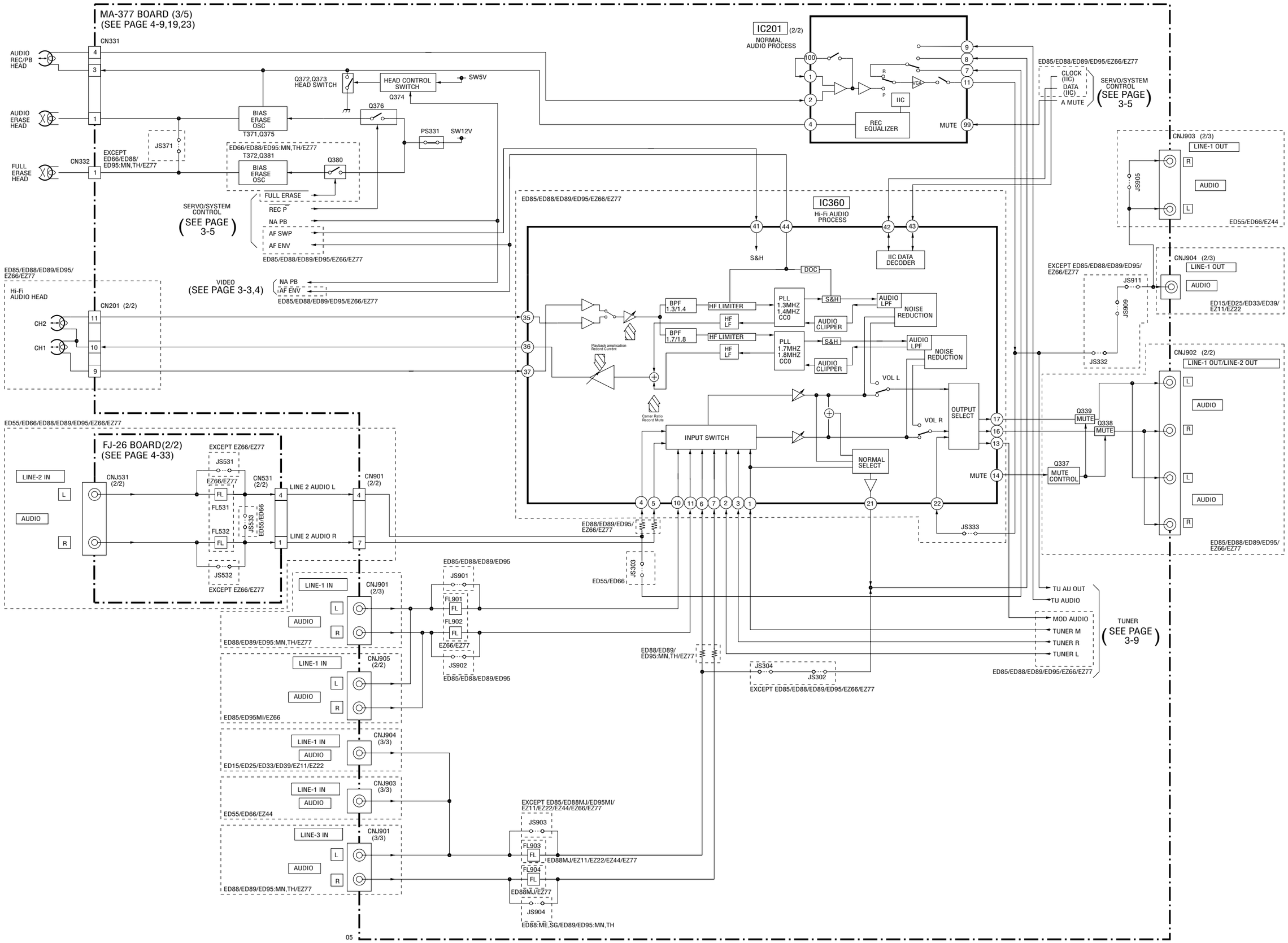
3-2. VIDEO BLOCK DIAGRAM



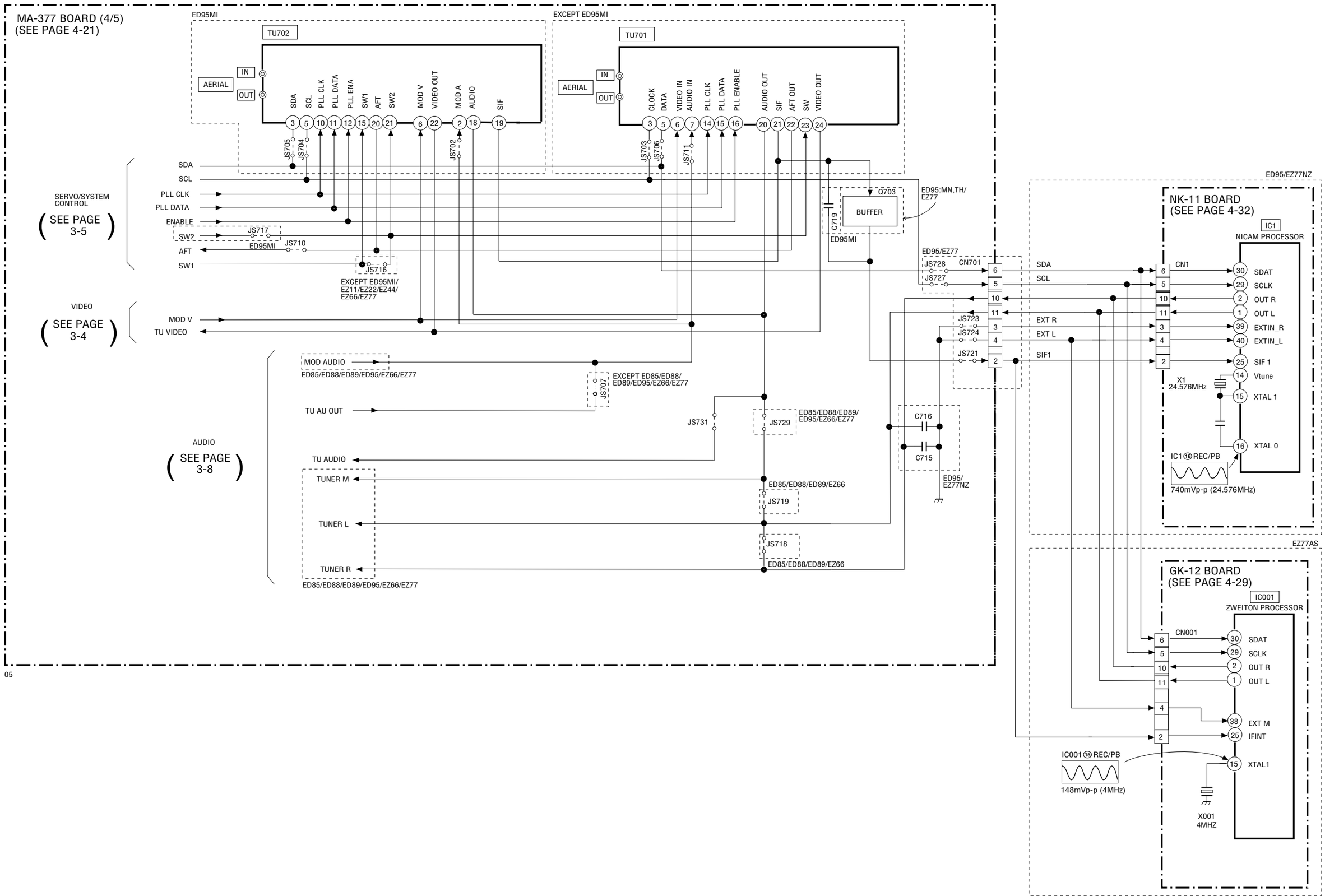
3-3. SERVO/SYSTEM CONTROL BLOCK DIAGRAM



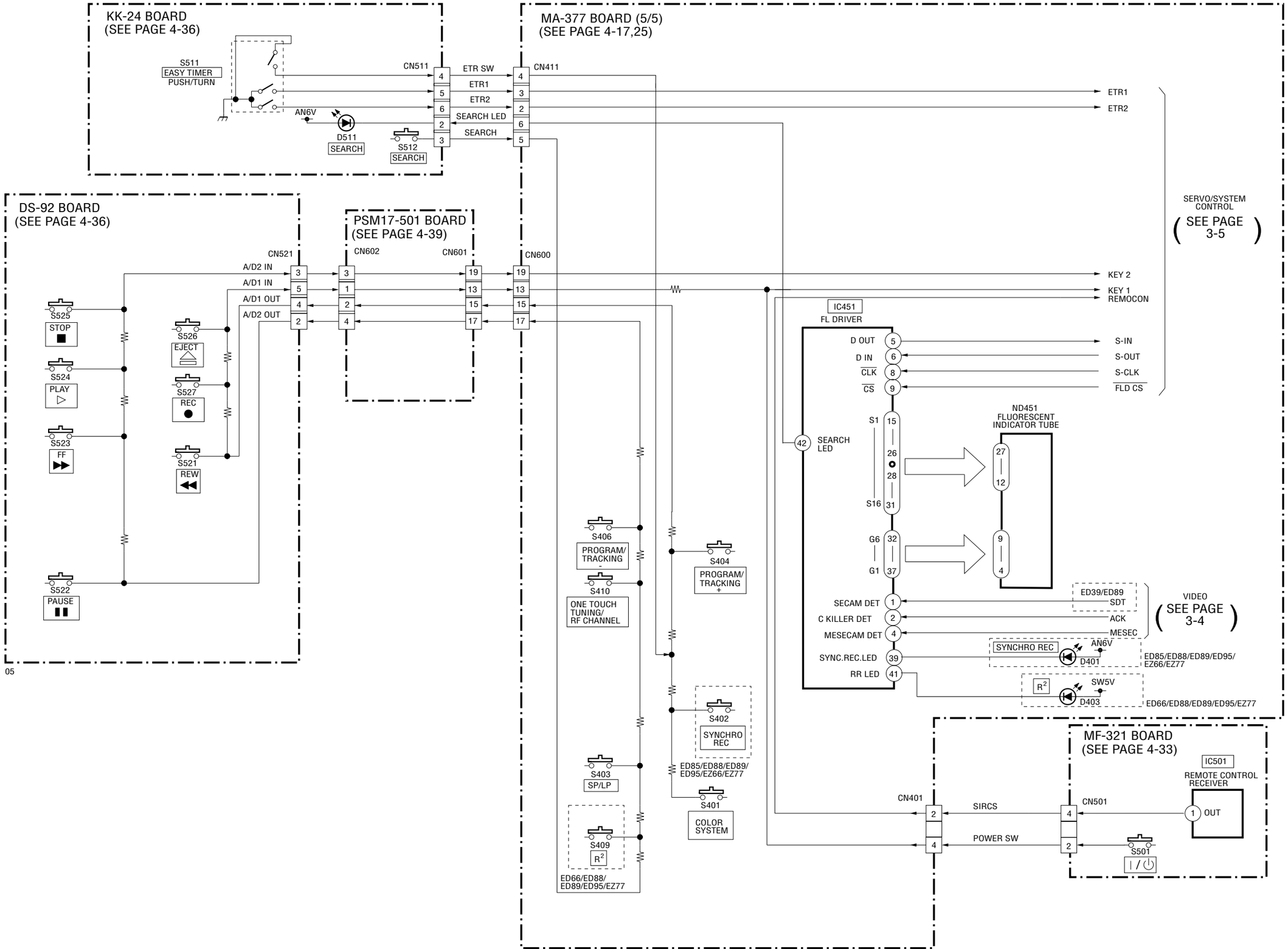
3-4. AUDIO BLOCK DIAGRAM



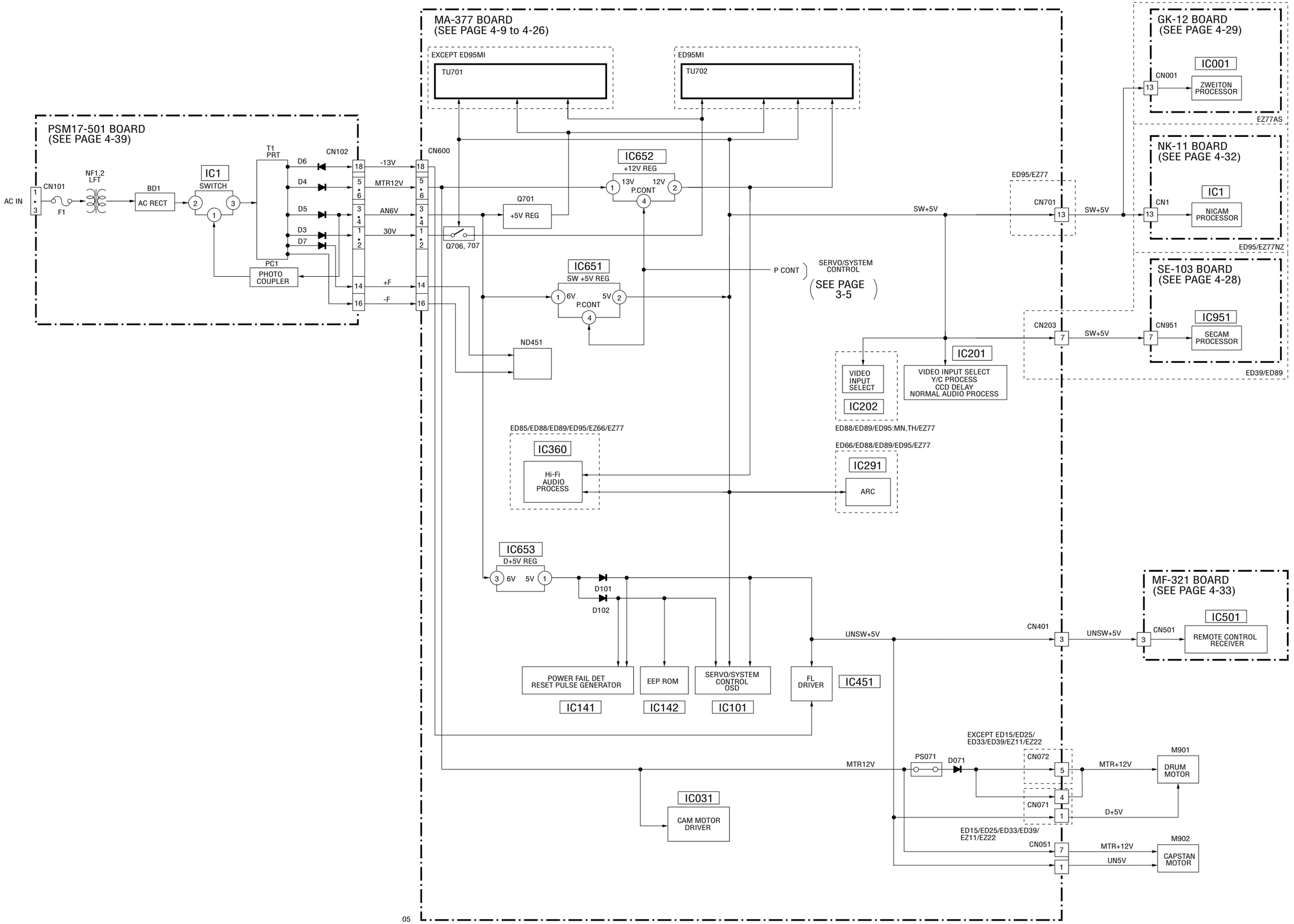
3-5. TUNER BLOCK DIAGRAM



3-6. MODE CONTROL BLOCK DIAGRAM



3-7. POWER BLOCK DIAGRAM



SECTION 4
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this, the necessary note is printed in each block.)

For printed wiring board:

- ○——— : indicates a lead wire mounted on the component side.
- ●——— : indicates a lead wire mounted on the printed side.
- ○ : Through hole.
- ■ : Parts mounted on the conductor side.
- ▒▒▒ : Pattern from the side which enables seeing.

(The other layers' patterns are not indicated.)

Caution:	
Pattern face side: (Side B)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Side A)	Parts on the parts face side seen from the parts face are indicated.

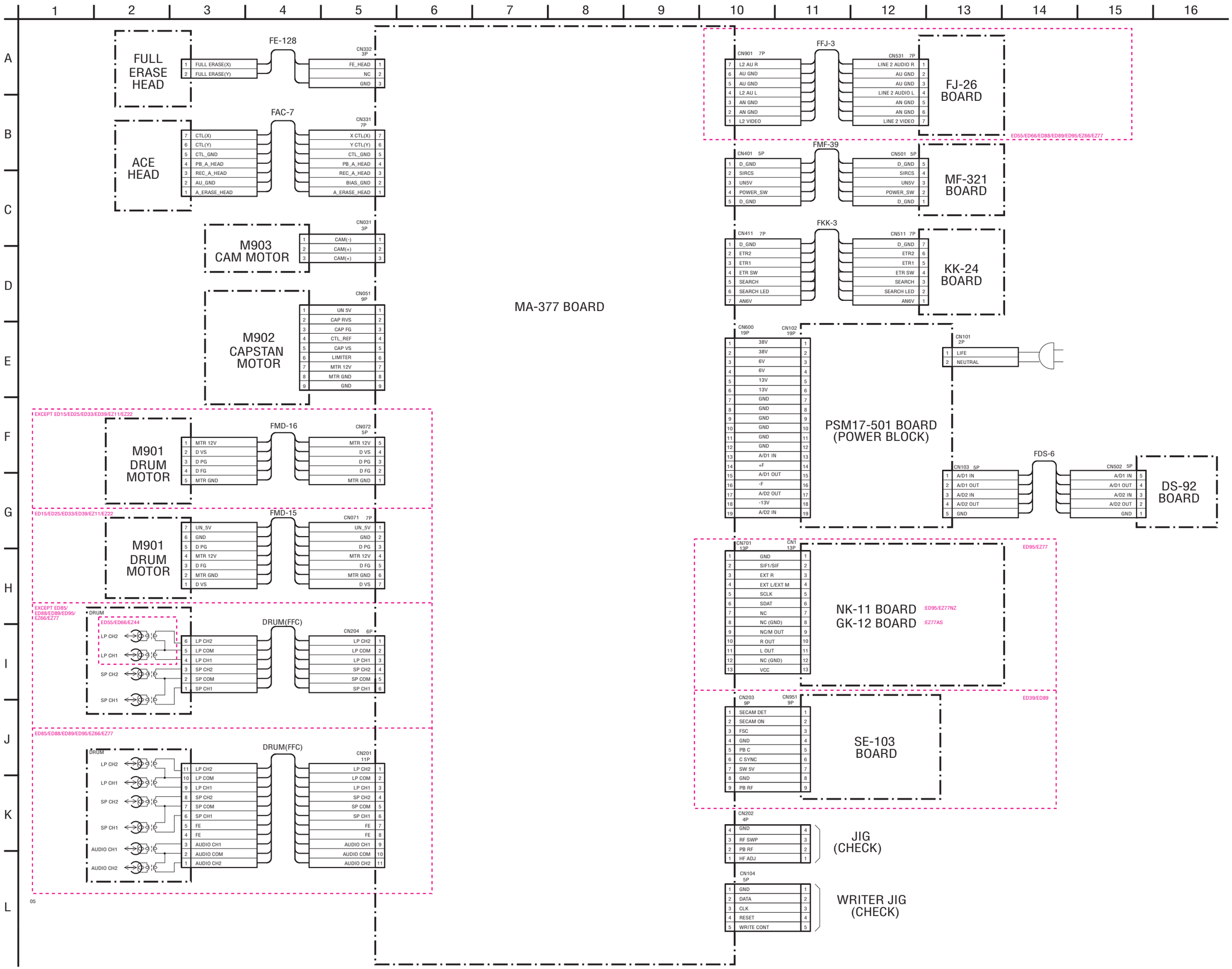
For schematic Diagram:

- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/4 W (Chip resistors : 1/10 W) unless otherwise specified.
  kΩ : 1000Ω, MW : 1000kΩ.
- All capacitors are in µF unless otherwise noted. pF : µµF 50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- : nonflammable resistor.
- : fusible resistor.
- : panel designation.
- △ : internal component.
- : adjustment for repair.
- B + : B+ Line.
- B − : B– Line.
- Circled numbers refer to waveforms.
- Voltages are dc between measurement point.
- Readings are taken with a color-bar signal input.
- Readings are taken with a digital multimeter (DC 10MW).
- Voltage variations may be noted due to normal production tolerances.

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

4-1. FRAME SCHEMATIC DIAGRAM

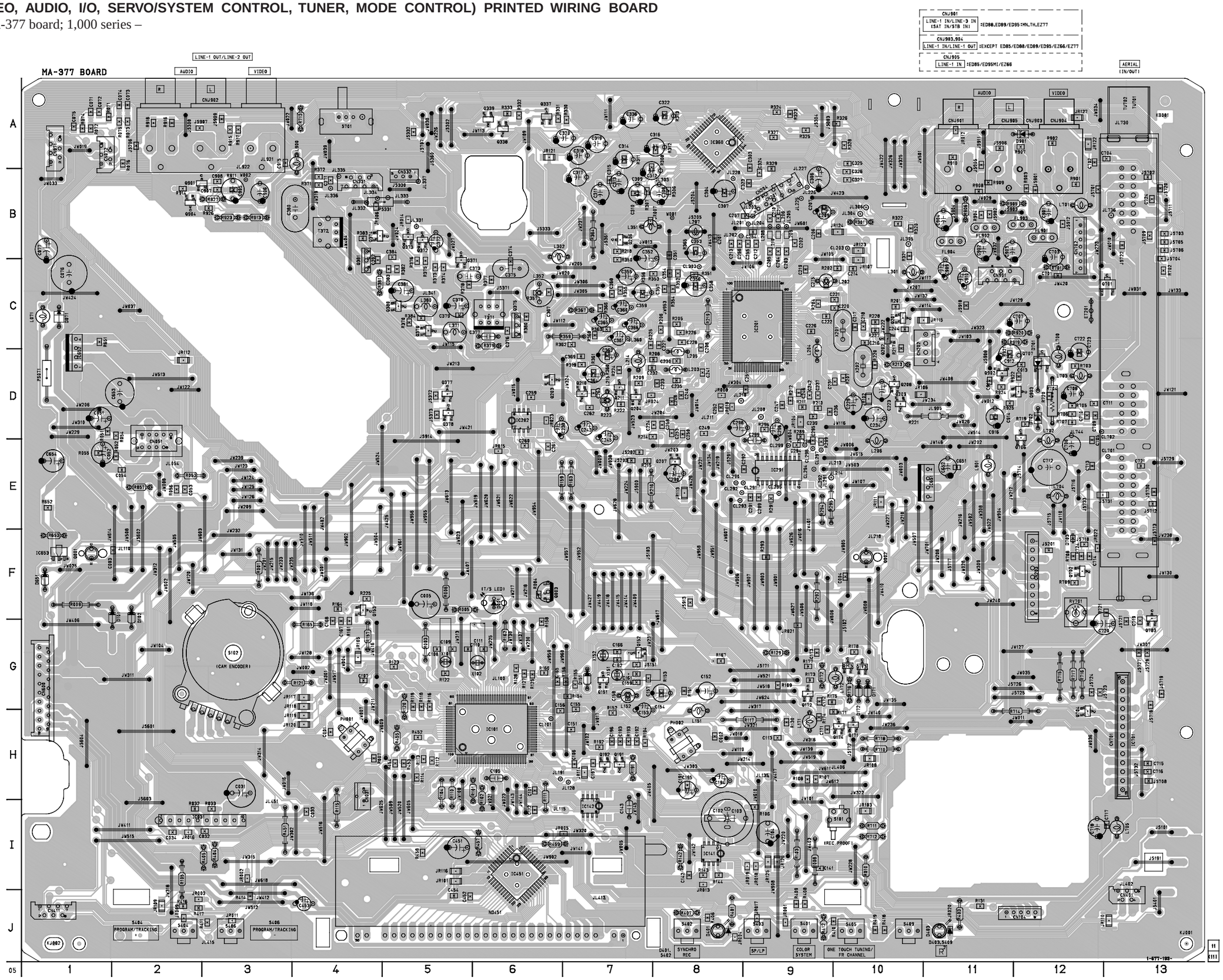


There are few cases that the part isn't mounted in this model is printed on this diagram.

4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

MA-377 (VIDEO, AUDIO, I/O, SERVO/SYSTEM CONTROL, TUNER, MODE CONTROL) PRINTED WIRING BOARD

– Ref. No.: MA-377 board; 1,000 series –



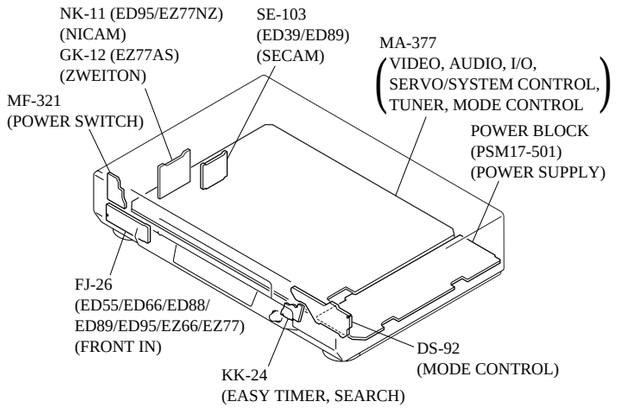
MA-377 BOARD

CN031	H-4
CN051	E-2
CN071	A-1
CN072	A-2
CN104	J-12
CN201	B-9
CN202	C-10
CN203	F-12
CN204	B-9
CN331	B-4
CN332	B-5
CN401	J-13
CN411	J-1
CN600	G-1
CN701	H-13
CN901	C-11

D001	F-6
D071	C-1
D101	F-2
D102	F-2
D151	G-7
D401	J-8
D403	J-11
D651	F-1
D701	D-12
D901	A-12

IC031	I-2
IC101	H-6
IC141	I-8
IC142	I-7
IC201	C-9
IC202	D-6
IC291	E-9
IC360	A-8
IC451	I-6
IC651	E-11
IC652	D-1
IC653	F-1

Q001	F-1
Q002	F-10
Q003	F-6
Q151	G-7
Q152	G-7
Q153	F-4
Q171	H-10
Q172	G-9
Q174	H-10
Q175	G-10
Q191	H-7
Q192	H-7
Q201	C-10
Q202	C-10
Q203	D-6
Q204	D-7
Q206	B-7
Q210	D-7
Q211	D-7
Q337	A-6
Q338	A-6
Q339	A-6
Q372	B-5
Q373	B-5
Q374	B-4
Q375	C-6
Q376	C-5
Q380	C-5
Q381	B-4
Q701	C-13
Q703	G-13
Q706	E-12
Q707	D-12
Q901	B-2
Q902	D-11
Q903	D-12
Q904	B-2



MA-377 (VIDEO, AUDIO) SCHEMATIC DIAGRAM

• See page 4-5 for printed wiring board.

– Ref. No.: MA-377 board; 1,000 series –

MA-377 BOARD (1/7)

*C214
22p :ED15/ED25/ED33/ED39/EZ11/EZ22
33p :EXCEPT ED15/ED25/ED33/ED39/EZ11/EZ22

*R202
100 :EXCEPT ED15/ED25/ED33/ED39/EZ11/EZ22
220 :ED15/ED25/ED33/ED39/EZ11/EZ22

ED39/ED89

CN203 9P
SECAM DET 1
SECAM ON 2
FSC 3
GND 4
PB C 5
C SYNC 6
SW 5V 7
GND 8
PB RF 9

SE-103 BOARD CN951 (SEE PAGE 4-28)

*L208,L209,L210
0 :EXCEPT ED15/ED25/ED33 ED39/EZ11/EZ22
2.2uH :ED15/ED25/ED33/ED39/ED39/EZ11/EZ22

CN202 4P
HF ADJ 1
PB RF 2
RF SWP 3
GND 4

CHECK (JIG)

ED85/ED88/ED89/ED95/EZ66/EZ77

CN201 11P
LP CH2 1
LP COM 2
LP CH1 3
SP CH2 4
SP COM 5
SP CH1 6
FE 7
FE 8
AUDIO CH1 9
AUDIO COM 10
AUDIO CH2 11

ED55/ED66/EZ44

CN204 6P
LP CH2 1
LP COM 2
LP CH1 3
SP CH2 4
SP COM 5
SP CH1 6

EXCEPT ED85/ED88/ED89/ED95/EZ66/EZ77

*C202,C205
4700p:EXCEPT ED15/ED25/ED33/ED39/EZ11/EZ22
0.01u:ED15/ED25/ED33/ED39/EZ11/EZ22

*C203,C204
2200p:EXCEPT ED15/ED25/ED33/ED39/EZ11/EZ22
0.01u:ED15/ED25/ED33/ED39/EZ11/EZ22

*C230
10p:ED66/ED88/ED89/ED95/EZ77
18p:ED15/EZ25/ED33/ED39/EZ11/EZ22
22p:ED55/ED85/EZ44/EZ66

*R208
3.3k:ED15/EZ25/ED33/ED39/EZ11/EZ22
6.8k:ED55/ED85/EZ44/EZ66
10k:ED66/ED88/ED89/ED95/EZ77

*C232
15p:ED66/ED88/ED89/ED95/EZ77
18p:ED15/EZ25/ED33/ED39/EZ11/EZ22
27p:ED55/ED85/EZ44/EZ66

*R209
1.2k:ED15/EZ25/ED33/ED39/EZ11/EZ22
3.3k:ED66/ED88/ED89/ED95/EZ77
8.8k:ED55/ED85/EZ44/EZ66

NO MARK:REC/PB MODE
R:REC MODE
P:PB MODE

SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡	➡	⇨
PB	⇨	⇨	⇨	⇨

EZ11/EZ22/EZ44/EZ66/EZ77
R217 470
C219 1000p

EXCEPT ED39/ED89
JS201 0

R201 10k
C214 CH
L202 10uH
R4/P1.5
R3.6/P2.1
Q201 2SD601A BUFFER

Q202 MUN2213T1 AFC FILTER SWITCH
R228 1k
C216 1u B
C217 4700p B
R204 27k
C220 0.47u B
C221 0.022u B
R213 10k
R212 47k
X202 3.579545MHz
EXCEPT EZ11/EZ22/EZ44/EZ66
C222 0.1u F
C223 4.7u 50V
C226 6p CH
C229 4.7u 50V
R207 470
R208 470
C231 0.022u B
C234 16V 47u
C237 0.01u B
C238 0.1u F
C239 0.01u B
C242 0.1u F
C246 0.01u B
C247 0.22u B
L206 100uH
R211 0
EXCEPT ED66/ED88/ED89/ED95/EZ77 JS291
ED66/ED88/ED89/ED95/EZ77

R202 C212 0.01u CH
C213 0.01u CH
C210 68p
C211 68p
ED15/ED25/ED33/ED39/EZ11/EZ22
L208 C202 C203
L209 C204
L210 C205
C201 2.2u F
L207 10uH
C254 4700p B
C255 2200p B
C256 2200p B
C257 4700p B
EXCEPT ED15/ED25/ED33/ED39/EZ11/EZ22
C353 4.7u 50V
R365 1.5M
L351 100uH
C351 0.1u F
R218 4700
C352 47u 16V
R350 10k
CL303
C206 0.033u B
C209 3.3u 50V
C207 0.1u F
C217
H44
C244 0.01u B
JL217
JL201 JL202 JL203 JL204 JL205 JL206 JL225 JL226 JL227 JL228
HC37 HC36 HC35

IC201 HA118217F
IC201
VIDEO REC/PB AMP
VIDEO INPUT SELECT
Y/C PROCESS
NORMAL AUDIO PROCESS

IC291
ARC IC291 LA7277M-TLM
R296 10k
C290 4.7u 50V
CL290
C289 0.1u
CL292
CL293
C292 2.2u F
C291 0.22u B
R291 10k ±0.5%
CL295
JL291
JL292
HT43
HT42
R294 100
R295 100
C209 0.01u Y
C298 4.7u 50V
C296 10u 16V
CL231
CL230
CL299
CL298
CL297
CL296
C294 0.01u B
R299 8200
C295 0.01u B
R289 1k
CL294
C COUT
Y COUT
Y SYNC
V OUT
VCC
FIL ADJ
MONI 1
MONI 2
CLK
DATA
C IN
MCOR 3
Y IN
REG
GND
SUB
MAIN OFF

R296 10k
R212 4700
R211 0
JL208
JL209
JL210
JL211
JL212
JL213
JL214
JL215
JL216
VR62
VR63
VR64
VV46
VV35
VV37
VV44
VV21
VV26
VV37
VV35
VV21
VV26
V51
V52
V50

SYNC SEP OUT
AV TAB
CCD C-IN
CCD GND
CCD CLK IN
CCD TAB
CCD Y-IN
CCD Y-OUT
CCD MODE COUNT IN
CCD VCC
CCD C-OUT
LINE IN1
C249 0.01u B
C252 330p CH
C251 2.2u F
C253 1u B
R216 100

C258 1u B
R215 100
C241 0.1u F
C240 0.1u F
C243 3.3u 50V
C235 0.1u F
C236 10u 16V
C248 2.2u F
C208 0.1u F
R222 220
L215 47uH
R223 220
C262 47p CH
C261 0.01u B
C260 0.01u B
JS202 0
C263 39p CH
C259 2.2u
R224 1k
C224 1u B
R214 100
EXCEPT ED85/ED88/ED89/ED95/EZ66/EZ77 JS203 0
ED55/ED66/ED88/ED89/ED95/EZ66/EZ77
ED88/ED89/ED95:MN,TH/EZ77
ED55/ED66/ED95MI/EZ66
Q211 2SD601A-QRS-TX BUFFER
IC202 BA7653AF-E2
IC202
VIDEO INPUT SELECT
IN3 IN2 IN1 VCC OUT GND INS NC

Q210 UN2213-TX REC TRAP SWITCH
Q203 UN2213-TX
Q204 MUN2213T1
Q203,204 PAL/NTSC SWITCH
R205 1500
R206 1500
R209
R219 2.2M
R225 1k
R226 120k
R227 1k
R228 1k
R357 0
R355 18k
R354 27k
R356 27k
R360 10k
R361 0
R362 10k
R363 15k
R364 47k
R365 1.5M
R366 47k
R367 47k
R368 4700
R369 0.01u B
R319 470
C225 2.2u F
C227 150p CH
C228 0.1u F
C230 CH
C232 CH
C233 0.1u F
L214 10uH
L205
L360
C366 1u 50V
C364 4.7u 50V
C362 22u 16V
C361 1u 50V
C363 1u 50V
C359 4.7u 50V
C358 1500p B
C356 10u 50V
C357 1500p B
C355 22u 16V
C360 10u 16V
C350 4.7u 50V
R353 120
ED55/ED66
JL207
JL208
JL209
JL210
JL211
JL212
JL213
JL214
JL215
JL216
JL360
VV21
VV26
VV35
VV37
VV44
VV46
V50
V51
V52
V76
V17
A4
B34
HA21
HA22
VS1
VS3
AV2

W001
Q206 UN2213-TX INVERTER
C354 0.022u B
R352 180k
R351 3900
R350 10k
CL303
A99
V97

AUDIO PB IN (-)
AUDIO PB IN (+)
AUDIO PB EP SW
AUDIO REC OUT
AUDIO GND
B.G.
AUDIO LINE IN3
AUDIO LINE IN2
AUDIO LINE IN1
AUDIO BYPASS
AUDIO LINE OUT
VCC
MAIN EM OUT(REC) MAIN EM IN(PB)
MAIN FM IN(REC) MAIN DEEM OUT(PB)
S-DET
E-PEAK
G-ED
CLAMP DRIVE
MAIN CLAMP IN
ME FBC(REC) ATFL (PB)
Y-CCD DRIVE
ME ALC/PB FM AGC
Y-CCD CLAMP
Y-CCD LPF OUT
CCD ADJ
FROM Y-CCD
GND
LINE IN3
AGC DET
LINE IN2

SP6/P
PB C OUT
SEP C IN
MESECAM DET
PB APC/REC AFC
3.58/4.43 X'tal IN
REC APC
X'tal OSC OUT
ACC DET
3.58 X'tal IN
CR-DET
CCD SIG 2fsc OUT
GND
DO OUT
LC-VCO
2fsc VCO DET
KILLER OUT
IIC DATA
IIC CLK
VCC
C-CCD DRIVE
LEVEL DET
C-CCD FB-IN
CCD CONT
VIDEO OUT ALC
PB C-OUT
COLOR IN
VIDEO OUT FBC
Y OUT
SQ IN

DRUM FF IN
CK DET
DISCRI
ENV OUT
GND
SP CH2(+)
SP CH2(-)
SP CH1(-)
SP CH1(+)
VCC
R0.1/P2.2 SP CH2(+)
R0.1/P2.2 SP CH2(-)
R0.1/P2.2 SP CH1(-)
R0.1/P2.2 SP CH1(+)
AUDIO ALC FILTER
AUDIO VCC
S/VHS
REC Y+C OUT
MUTE
AUDIO PB EQ OUT

*L203,L205
82uH :ED15/ED25/ED33/ED39/EZ11/EZ22
100uH :EXCEPT ED15/ED25/ED33/ED39/EZ11/EZ22

CN1
V64 SDT
V97 ACK
MESEC
MA-377 BOARD(7/7) (SEE PAGE 4-25) 1

V67 SECON
V17 APC
V50 CSYNC
V51 QVD
V52 VOUT
VR62 VCLK
VR63 VDAT
V76 PAL
V81 RFSWP
V84 RFENV
AV2 INS
MA-377 BOARD(2/7) (SEE PAGE 4-13) 2

HT42 SDA
HT43 SCK
MA-377 BOARD(2/7) (SEE PAGE 4-13) 3

A4 NAPB
MA-377 BOARD(4/7) (SEE PAGE 4-19) 4

A99 AMUTE
V16 NTSC
MA-377 BOARD(2/7) (SEE PAGE 4-13) 5

GND
VIDEO_OUT
AUDIO_OUT
MA-377 BOARD(5/7) (SEE PAGE 4-21) 6

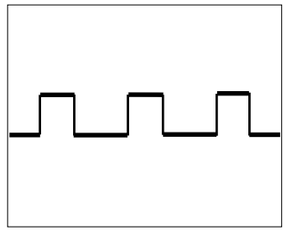
L1_VIDEO
L2_VIDEO
L3_VIDEO
MA-377 BOARD(6/7) (SEE PAGE 4-23) 7

HA21 NA_HF_OUT
HA22 NORMAL_AU
AF_ENV
H44
HC37 AUDIO_CH1
HC36 AUDIO_COM
HC35 AUDIO_CH2
MA-377 BOARD(4/7) (SEE PAGE 4-19) 8

SW5V
LINE_IN2_L
REC_A_HEAD
PB_A_HEAD
AU_GND
LINE_IN3L(SAT)
MA-377 BOARD(4/7) (SEE PAGE 4-19) 9

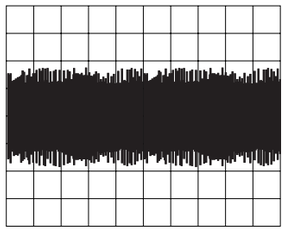
• **Waveforms**

❶ IC201 ㉛ REC/PB



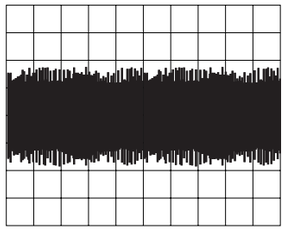
5.3 Vp-p (H)

❷ IC201 ㊱, ㊴ REC



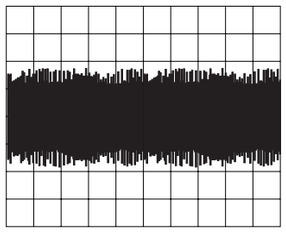
40 mVp-p (H)

❸ IC201 ㊾ PB



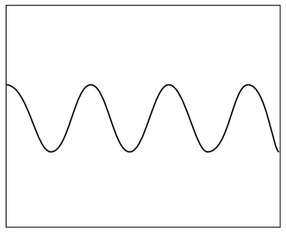
720 mVp-p (H)

❹ IC201 ㊽ PB



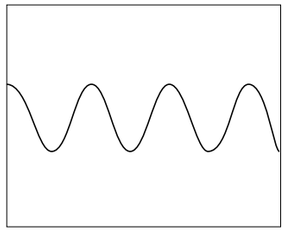
640 mVp-p (H)

❺ IC201 ㊾ REC/PB



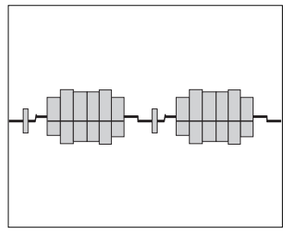
496 mVp-p (4.43 MHz) (PAL)

❻ IC201 ㊶ REC/PB



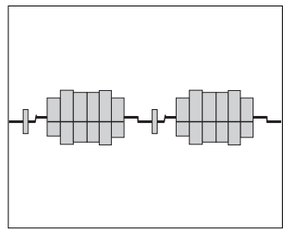
608 mVp-p (3.58 MHz) (NTSC)

❼ IC201 ㊵ REC/PB



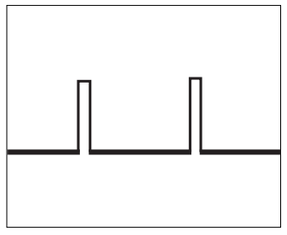
320 mVp-p (H)

❽ IC201 ㊽ REC/PB



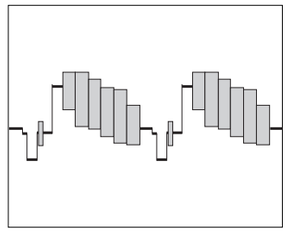
REC: 512 mVp-p (H)
PB : 584 mVp-p (H)

❾ IC201 ㊿ REC/PB



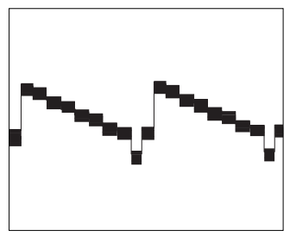
4.6 Vp-p (H)

❿ IC201 ㉚ REC/PB



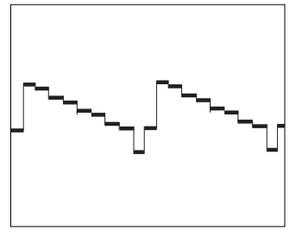
1.1 Vp-p (H)

⓫ IC201 ㉖ REC/PB



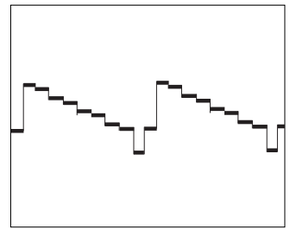
REC: 512 mVp-p (H)
PB : 584 mVp-p (H)

⓬ IC201 ⑱, ⑲, ㉓ REC/PB



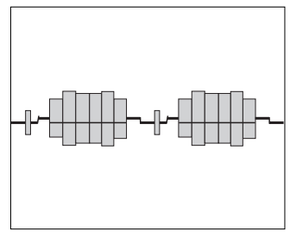
REC: 472 mVp-p (H)
PB : 504 mVp-p (H)

⓭ IC201 ㉑ REC/PB



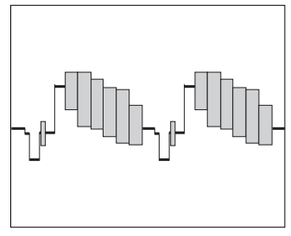
392 mVp-p (H)

⓮ IC291 ⑳ PB



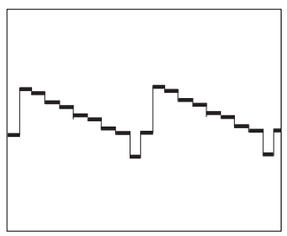
152 mVp-p (H)

⓯ IC291 ④, ⑱ REC



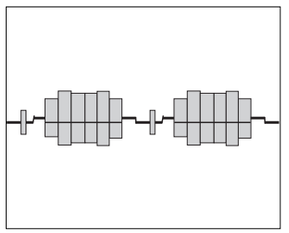
2.1 Vp-p (H)

⓰ IC291 ⑱ PB



1.9 Vp-p (H)

⓱ IC291 ④ PB

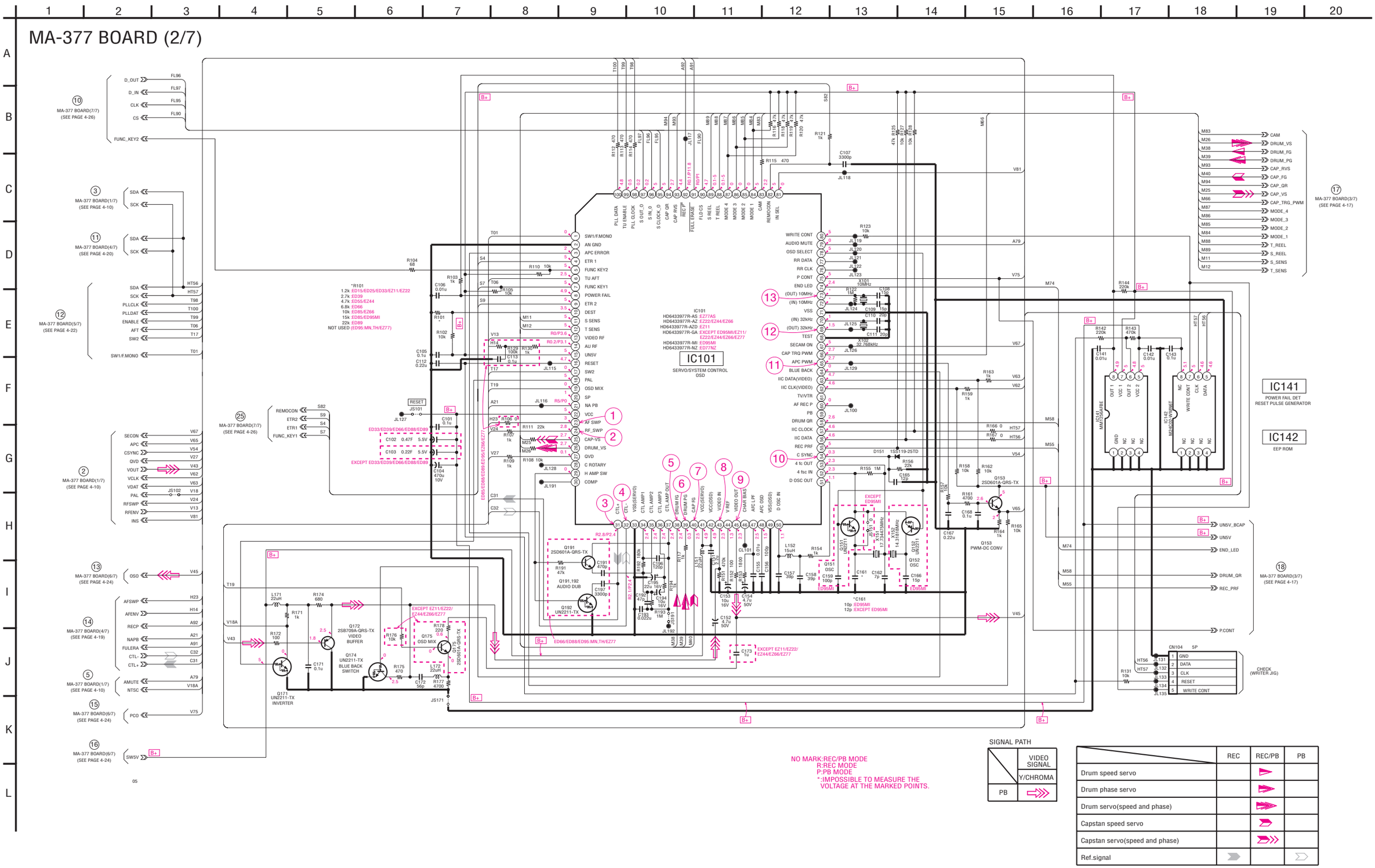


2.2 Vp-p (H)

MA-377 (SYSTEM CONTROL) SCHEMATIC DIAGRAM **• See page 4-5 for printed wiring board.**

– Ref. No.: MA-377 board; 1,000 series –

MA-377 BOARD (2/7)



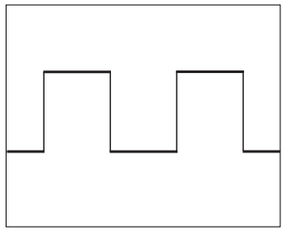
SIGNAL PATH

	VIDEO SIGNAL	Y/CHROMA
PB		

	REC	REC/PB	PB
Drum speed servo			
Drum phase servo			
Drum servo(speed and phase)			
Capstan speed servo			
Capstan servo(speed and phase)			
Ref.signal			

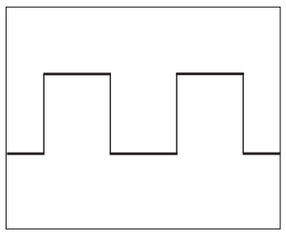
• **Waveforms**

❶ IC101 ㉓ REC/PB



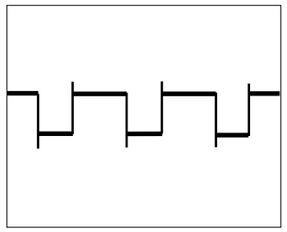
5.2 Vp-p (25 Hz)

❷ IC101 ㉔ REC/PB



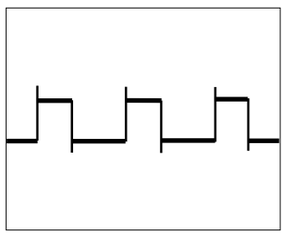
5.2 Vp-p (25 Hz)

❸ IC101 ㉛ REC/PB



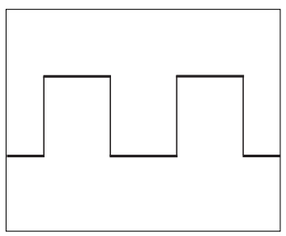
5.2 Vp-p (25 Hz)

❹ IC101 ㉜ REC/PB



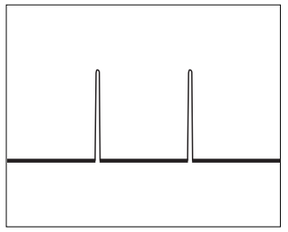
5.5 Vp-p (25 Hz)

❺ IC101 ㊳ REC/PB



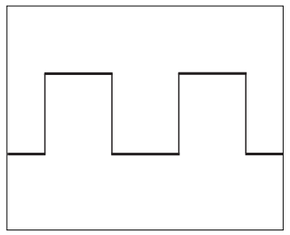
4.8 Vp-p (301.2 Hz)

❻ IC101 ㊴ REC/PB



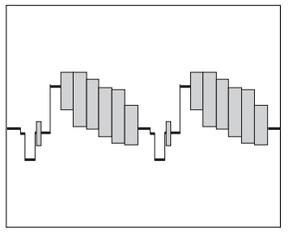
4.8 Vp-p (25 Hz)

❼ IC101 ㊵ REC/PB



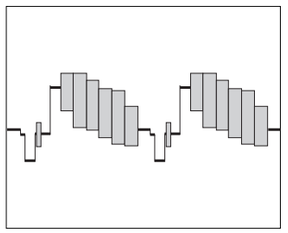
4.7 Vp-p (757.6 Hz)

❽ IC101 ㊸ REC/PB



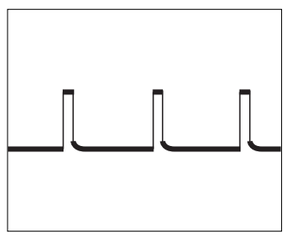
2.2 Vp-p (H)

❾ IC101 ㊺ REC/PB



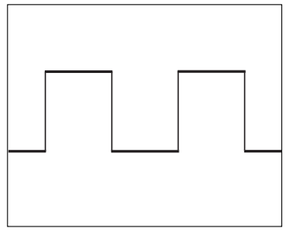
2.2 Vp-p (H)

❿ IC101 ㊹ REC/PB



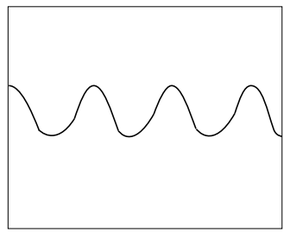
4.1 Vp-p (H)

⓫ IC101 ㊻ REC/PB



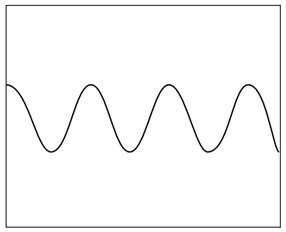
5.1 Vp-p (H)

⓬ IC101 ㊾ REC/PB



2.6Vp-p (32.768 kHz)

⓭ IC101 ㊸ REC/PB

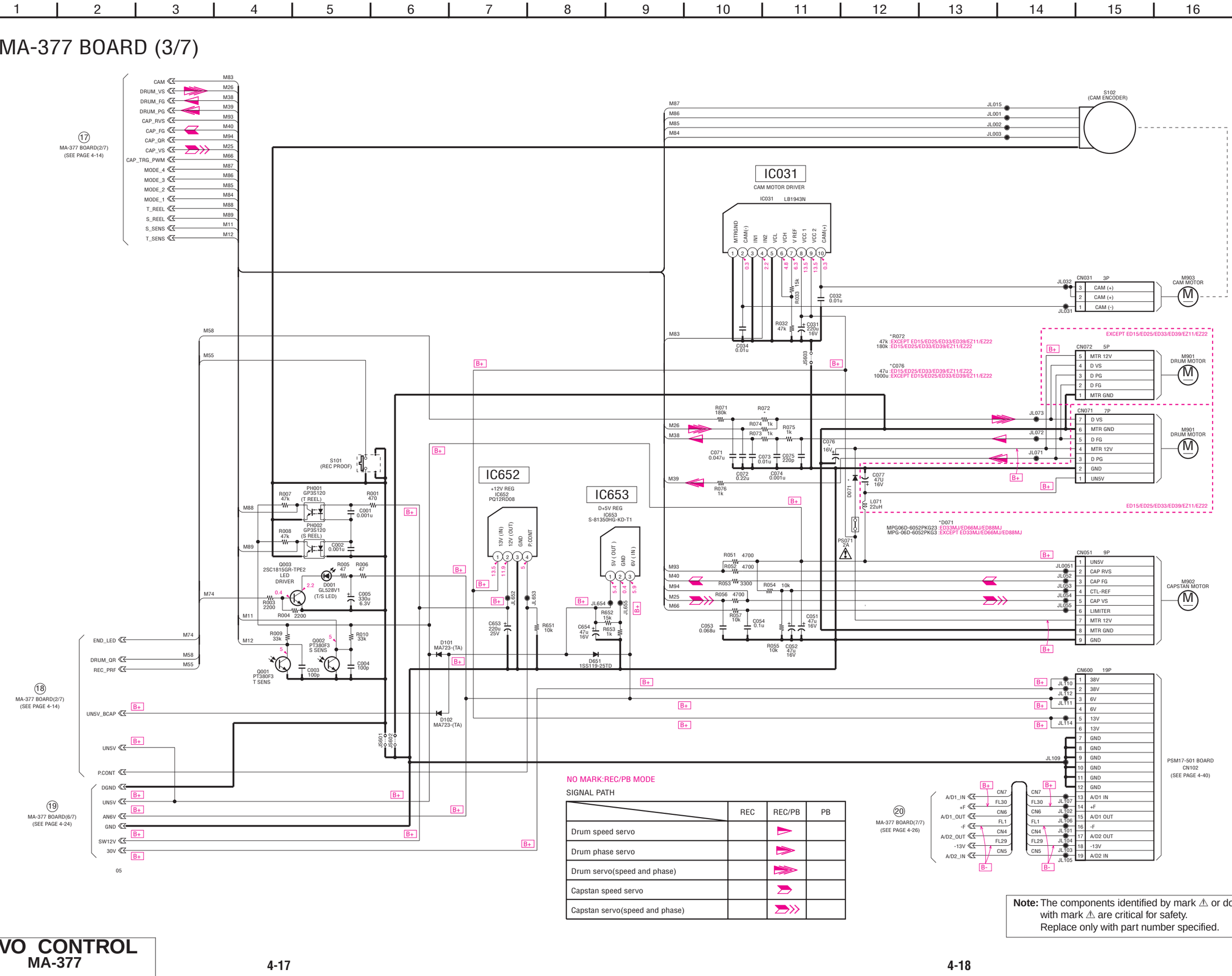


4.3 Vp-p (10 MHz)

MA-377 (SERVO CONTROL) SCHEMATIC DIAGRAM • See page 4-5 for printed wiring board.

– Ref. No.: MA-377 board; 1,000 series –

MA-377 BOARD (3/7)



NO MARK:REC/PB MODE

SIGNAL PATH

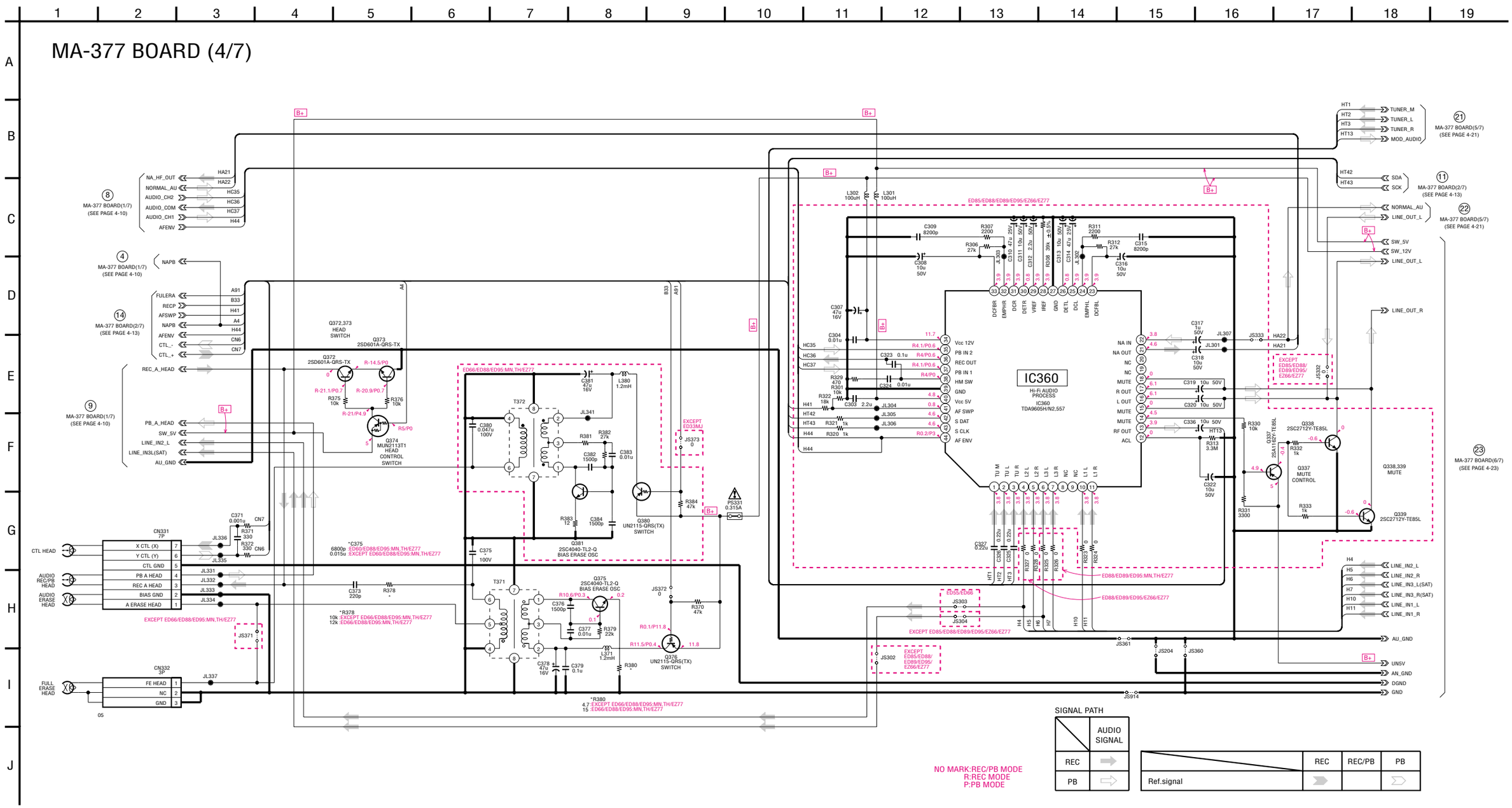
	REC	REC/PB	PB
Drum speed servo		▶	
Drum phase servo		▶	
Drum servo(speed and phase)		▶▶	
Capstan speed servo		▶	
Capstan servo(speed and phase)		▶▶	

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

MA-377 (Hi-Fi AUDIO) SCHEMATIC DIAGRAM • See page 4-5 for printed wiring board.

– Ref. No.: MA-377 board; 1,000 series –

MA-377 BOARD (4/7)

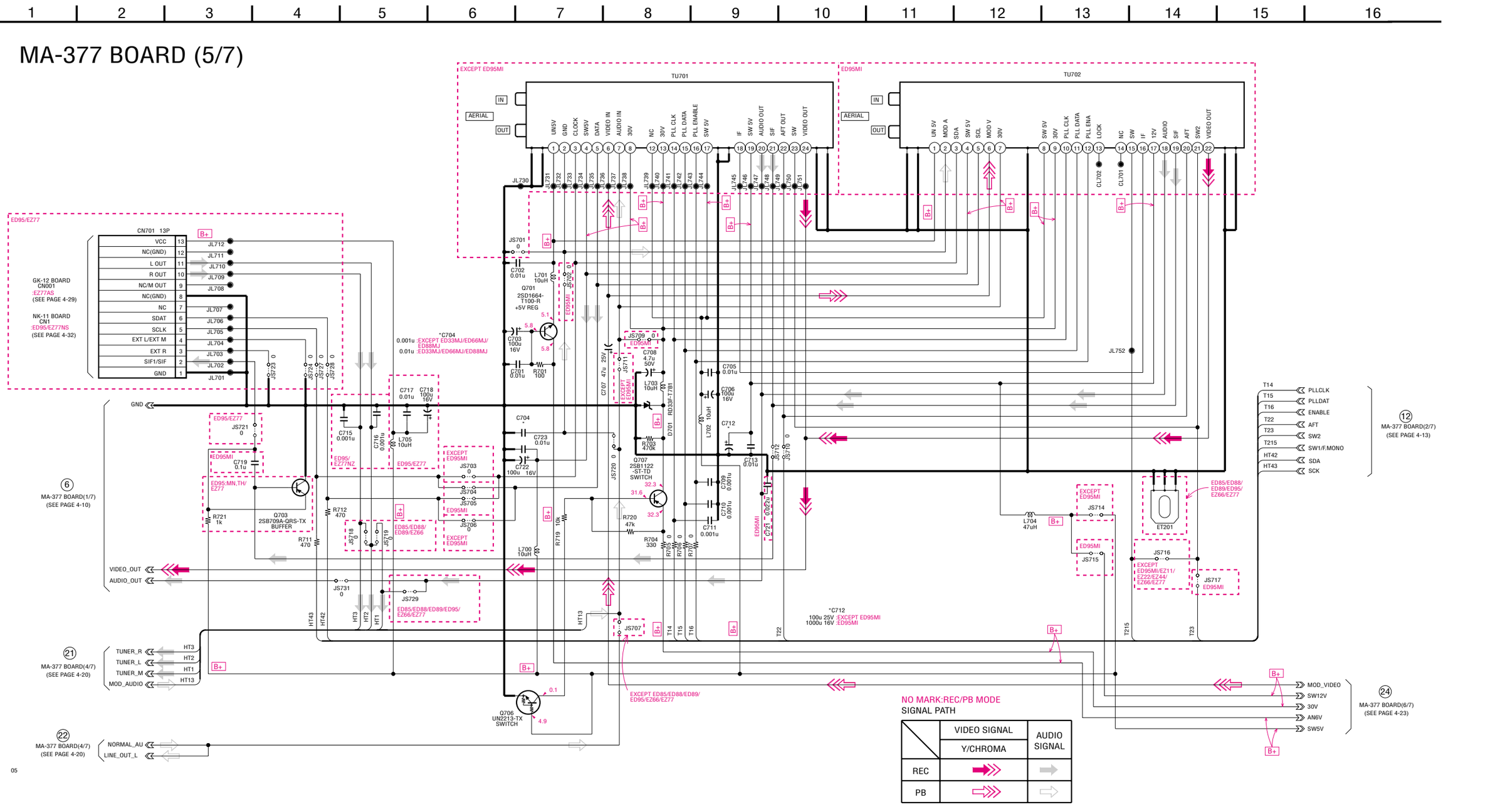


Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

MA-377 (TUNER) SCHEMATIC DIAGRAM **• See page 4-5 for printed wiring board.**

– Ref. No.: MA-377 board; 1,000 series –

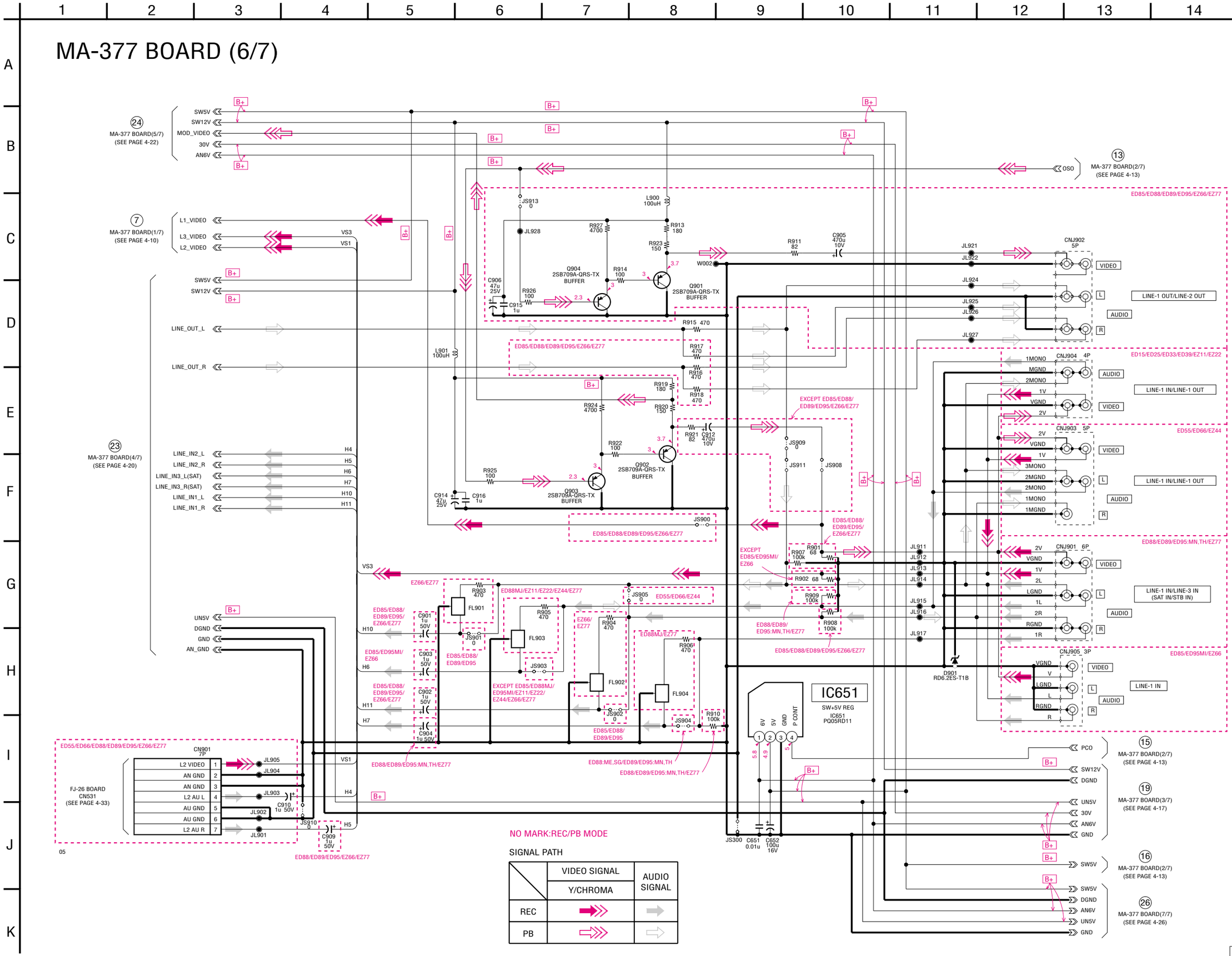
MA-377 BOARD (5/7)



MA-377 (I/O) SCHEMATIC DIAGRAM • **See page 4-5 for printed wiring board.**

– Ref. No.: MA-377 board; 1,000 series –

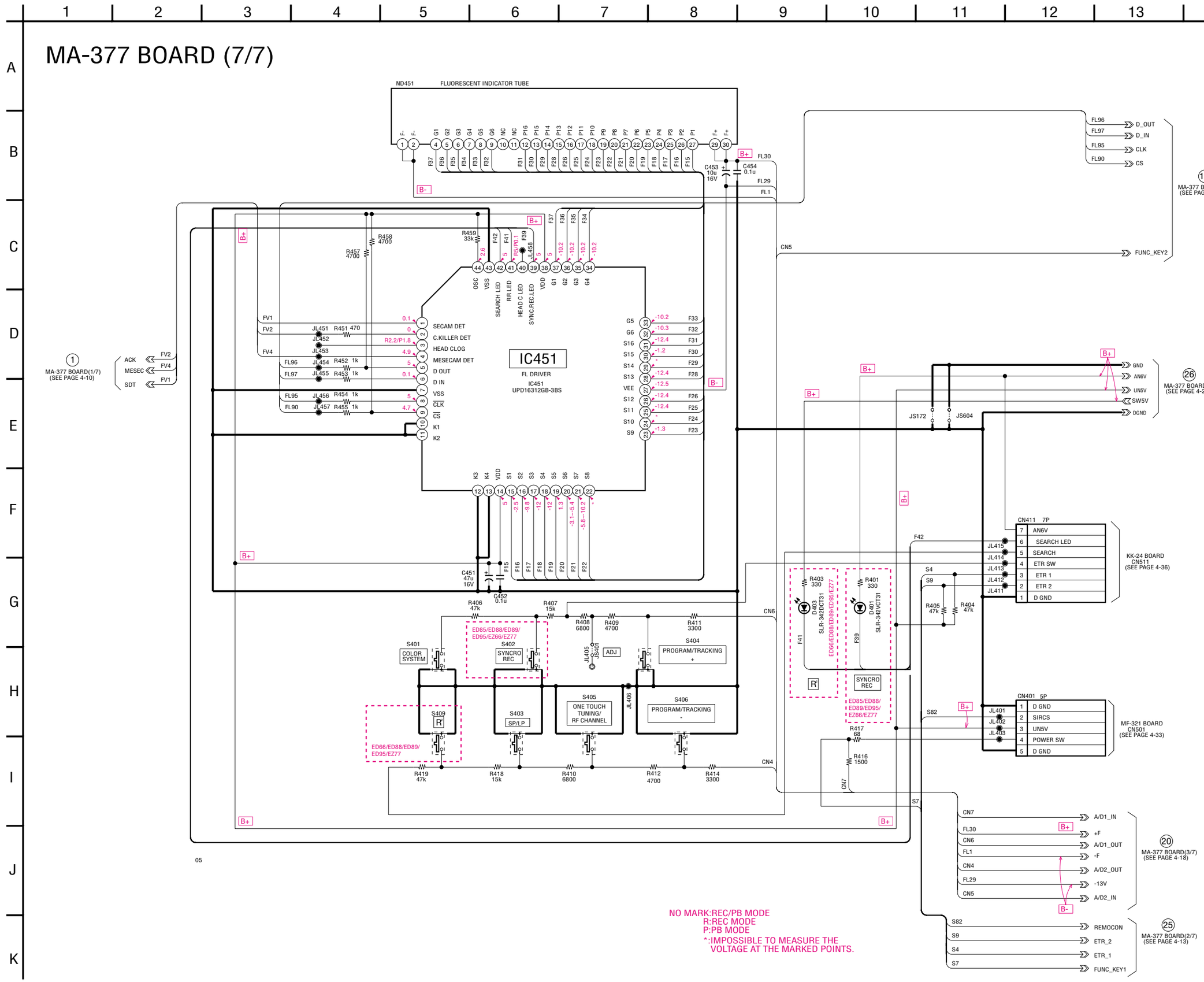
MA-377 BOARD (6/7)



MA-377 (MODE CONTROL) SCHEMATIC DIAGRAM • See page 4-5 for printed wiring board.

– Ref. No.: MA-377 board; 1,000 series –

MA-377 BOARD (7/7)

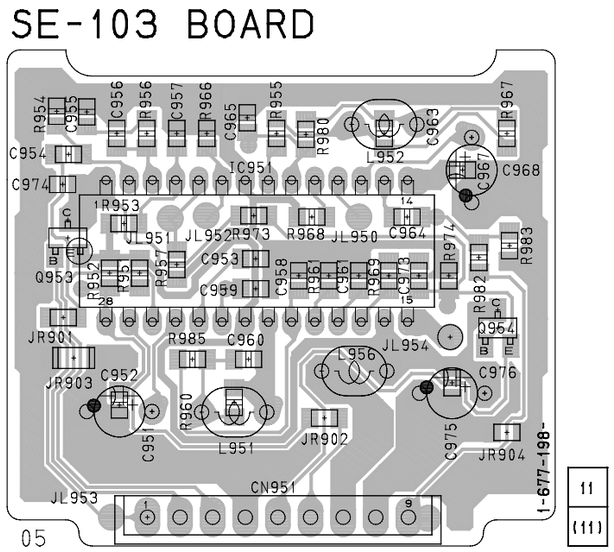


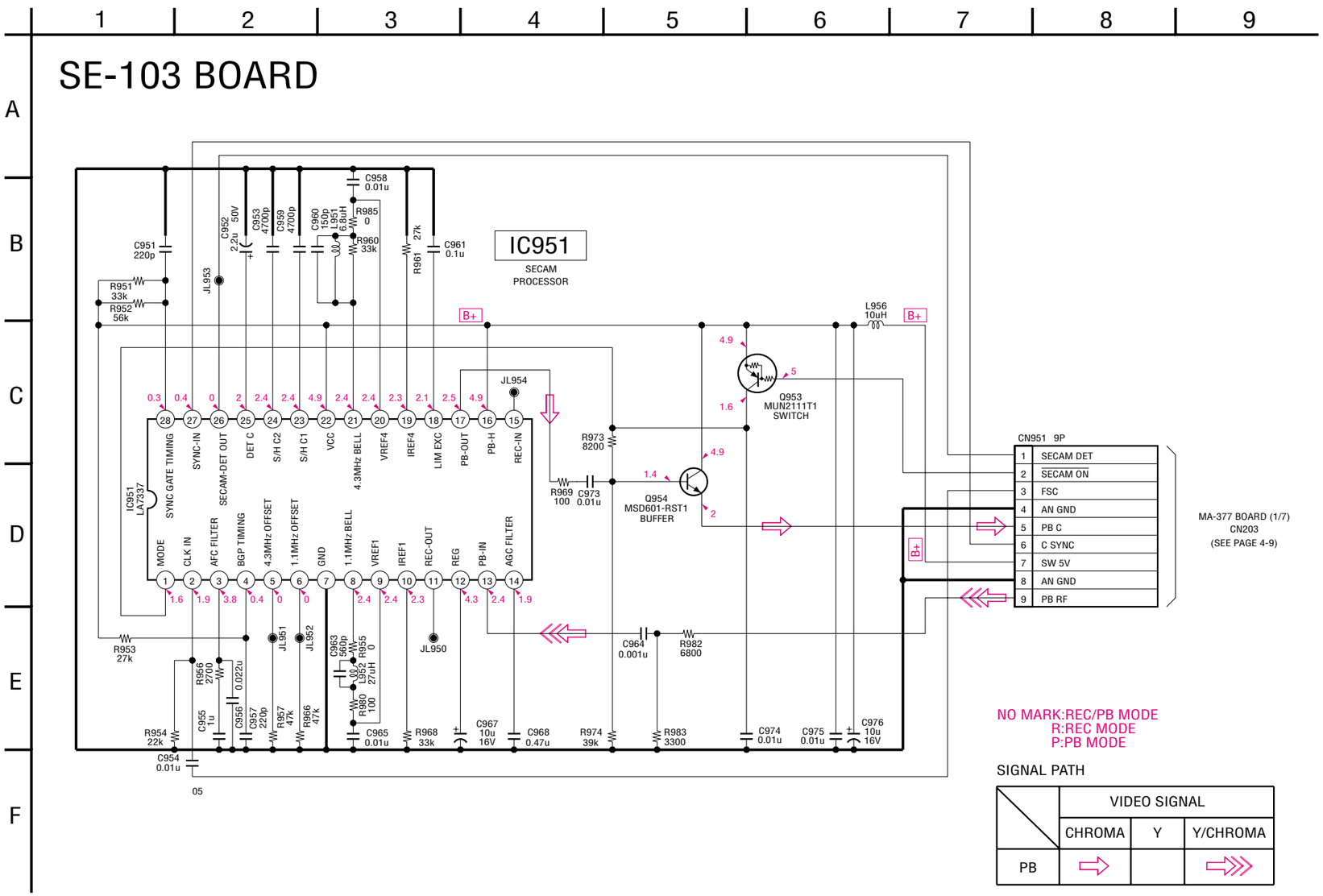
NO MARK:REC/PB MODE
R:REC MODE
P:PB MODE
*:IMPOSSIBLE TO MEASURE THE VOLTAGE AT THE MARKED POINTS.

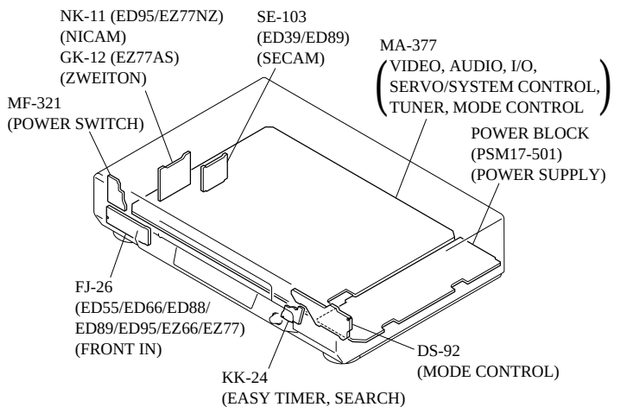
SE-103 (SECAM) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM
– Ref. No.: SE-103 board; 2,000 series –

– SLV-ED39/ED89 –

There are few cases that the part isn't mounted in this model is printed on this diagram.



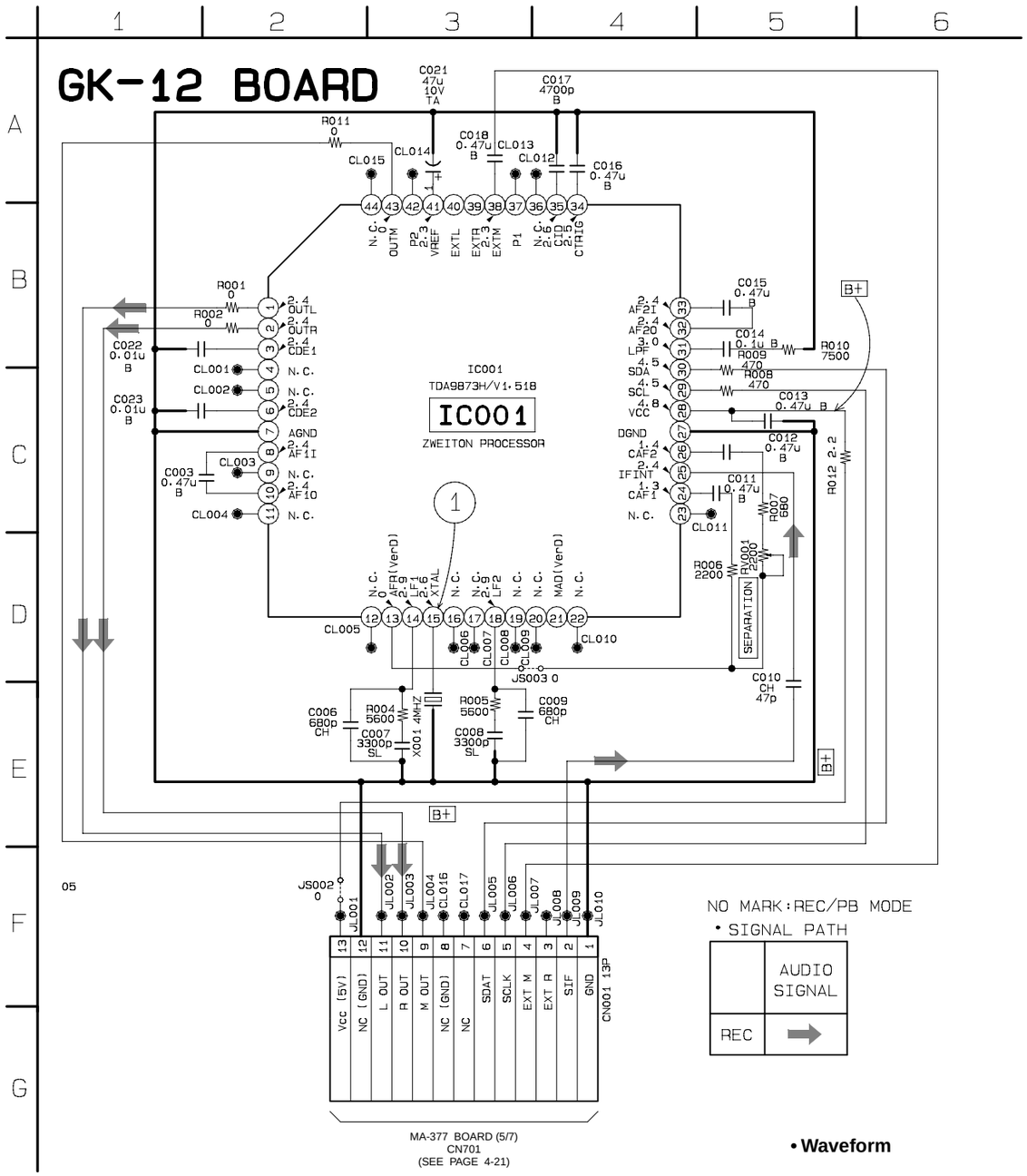




GK-12 (ZWEITON) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM

– Ref. No.: GK-12 board; 2,000 series –

– SLV-EZ77AS –



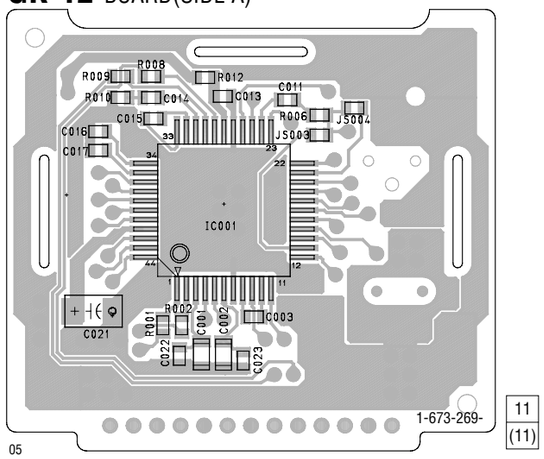
NO MARK : REC/PB MODE

• SIGNAL PATH

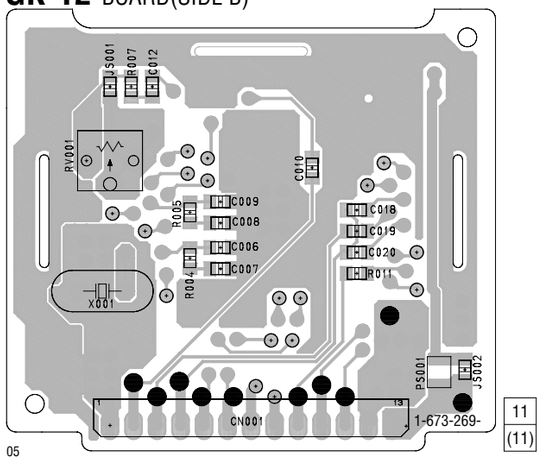
	AUDIO SIGNAL
REC	→

There are few cases that the part isn't mounted in this model is printed on this diagram.

GK-12 BOARD(SIDE A)

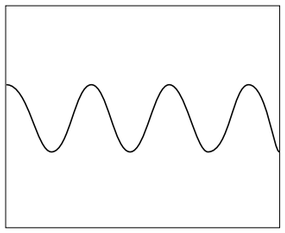


GK-12 BOARD(SIDE B)

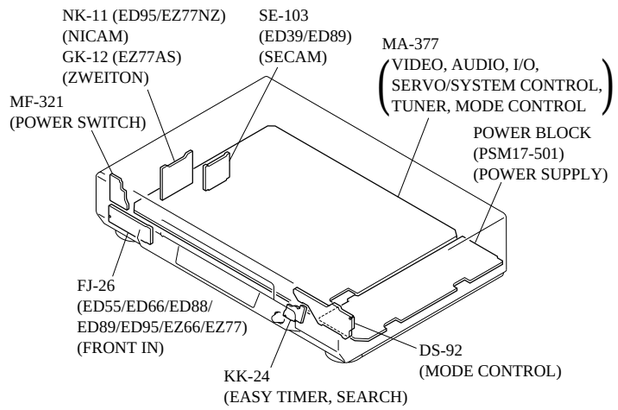


• Waveform

❶ IC001 ⑮ REC/PB



148 mVp-p (4 MHz)



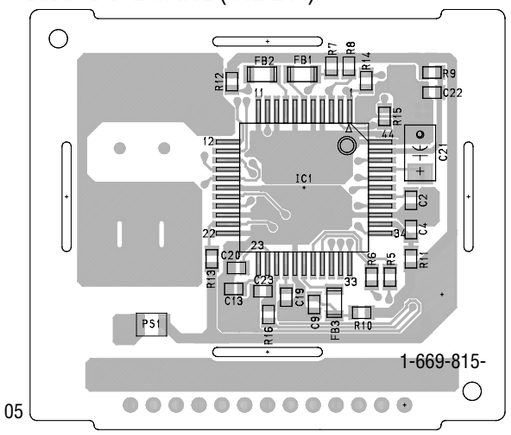
NK-11 (NICAM) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM

– Ref. No.: NK-11 board; 3,000 series –

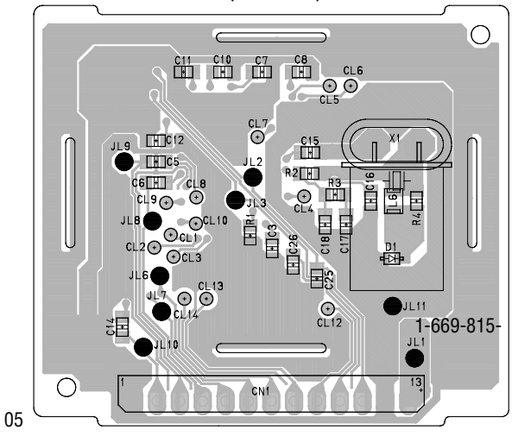
– SLV-ED95/EZ77NZ –

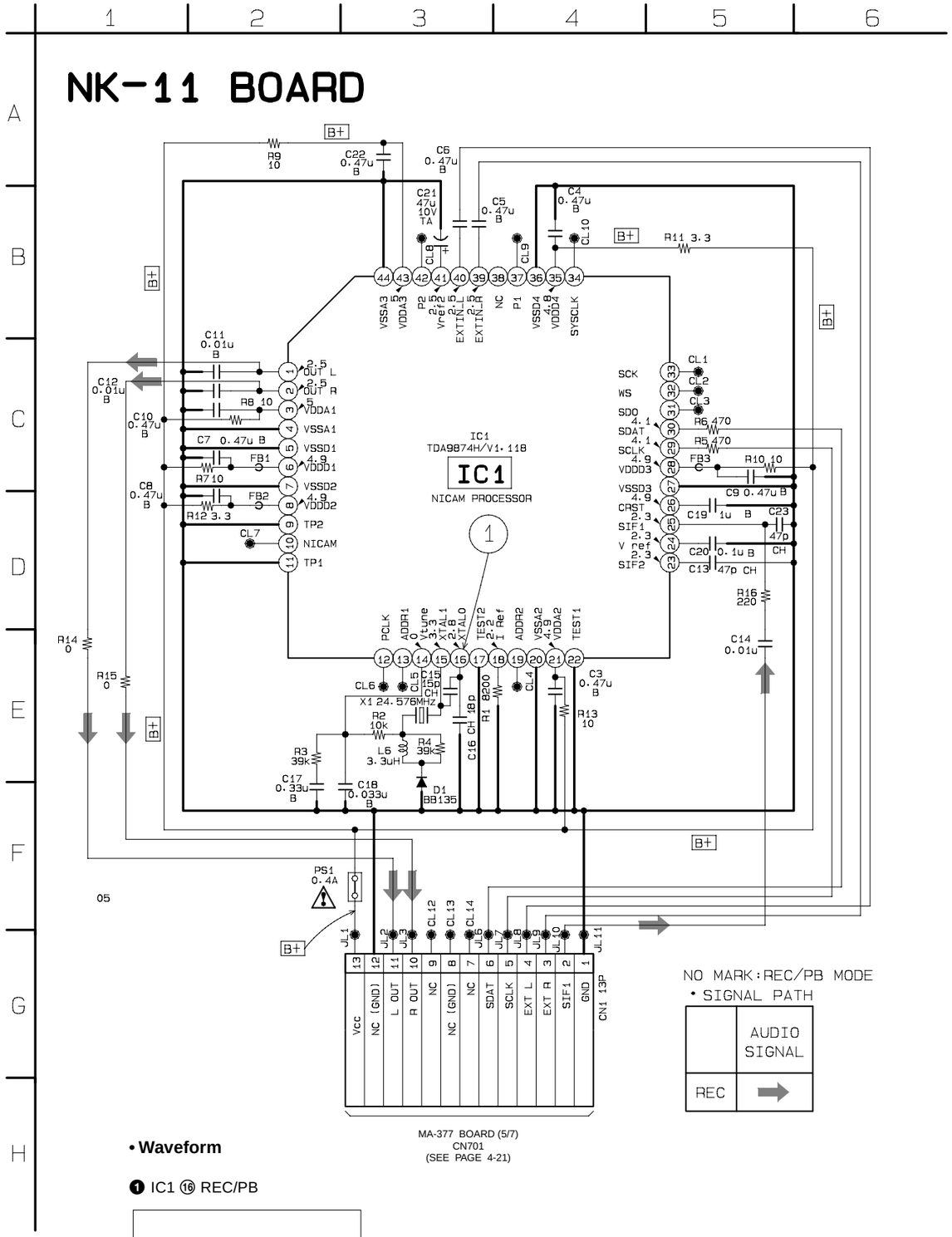
There are few cases that the part isn't mounted in this model is printed on this diagram.

NK-11 BOARD(SIDE A)



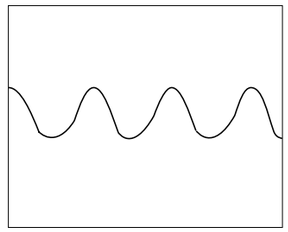
NK-11 BOARD(SIDE B)





• **Waveform**

❶ IC1 ⑯ REC/PB

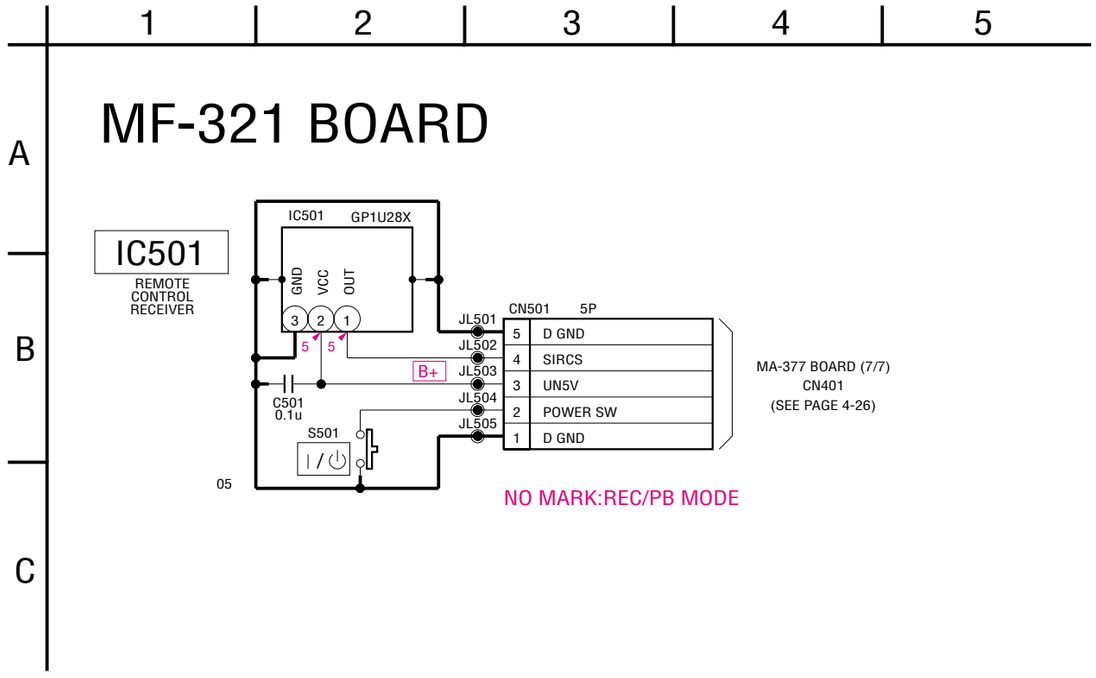


740 mVp-p (24.576 MHz)

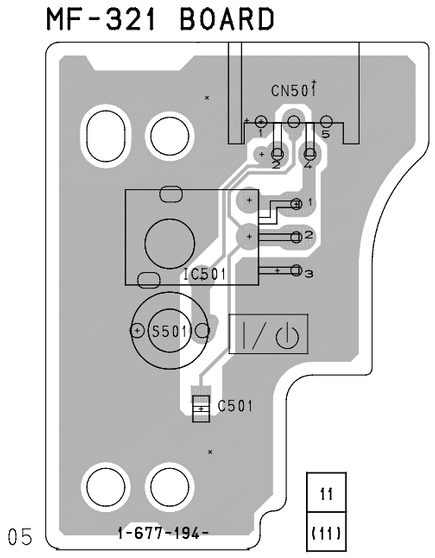
Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

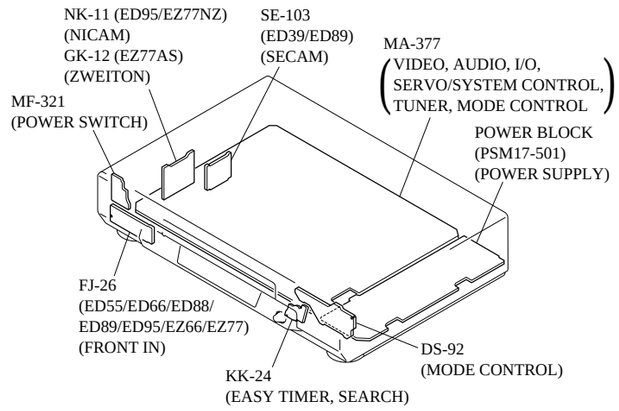
FJ-26 (FRONT IN), MF-321 (POWER SWITCH) PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

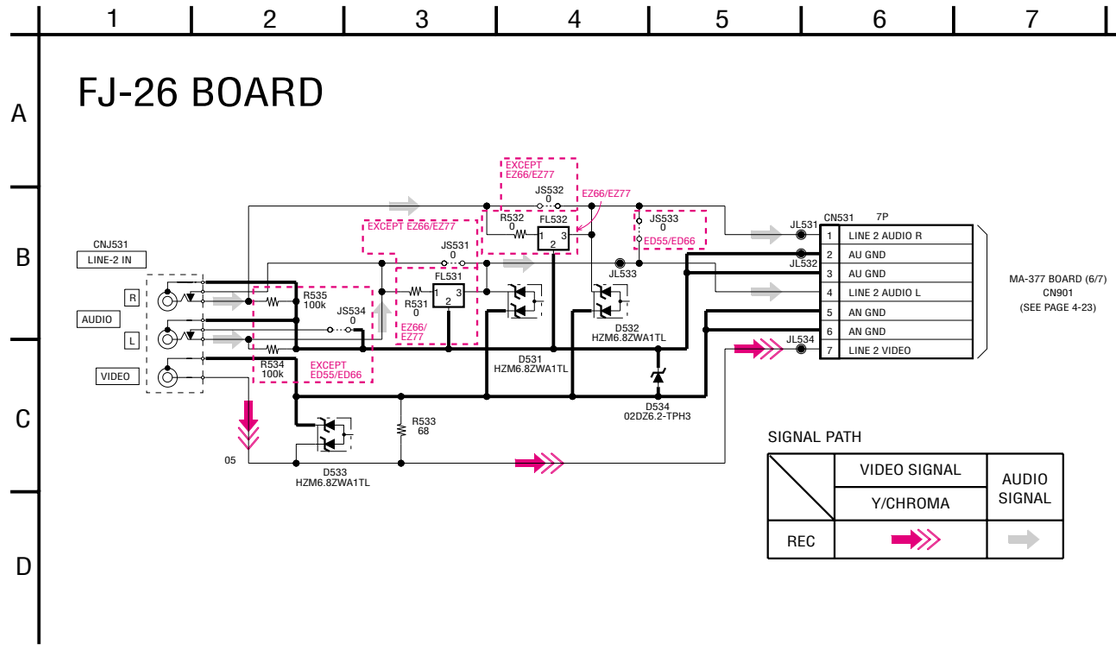
– Ref. No.:FJ-26 board, MF-321 board; 1,000 series –

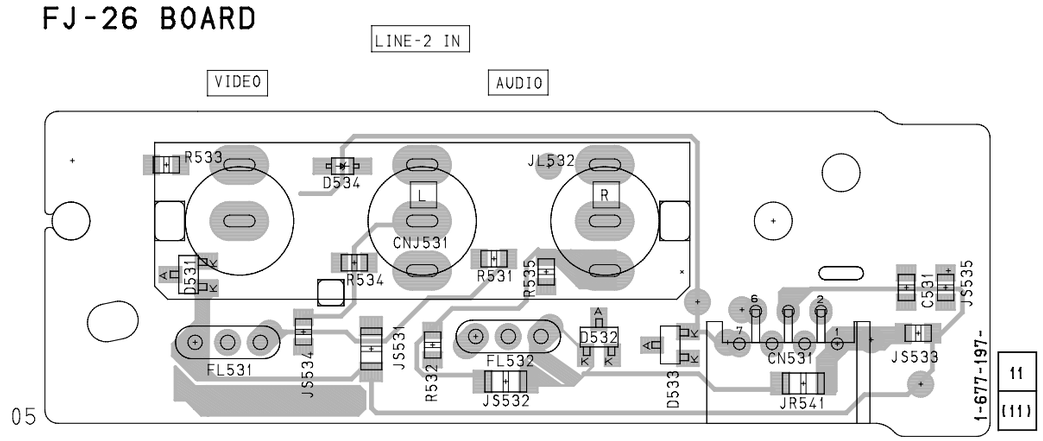


There are few cases that the part isn't mounted in this model is printed on this diagram.





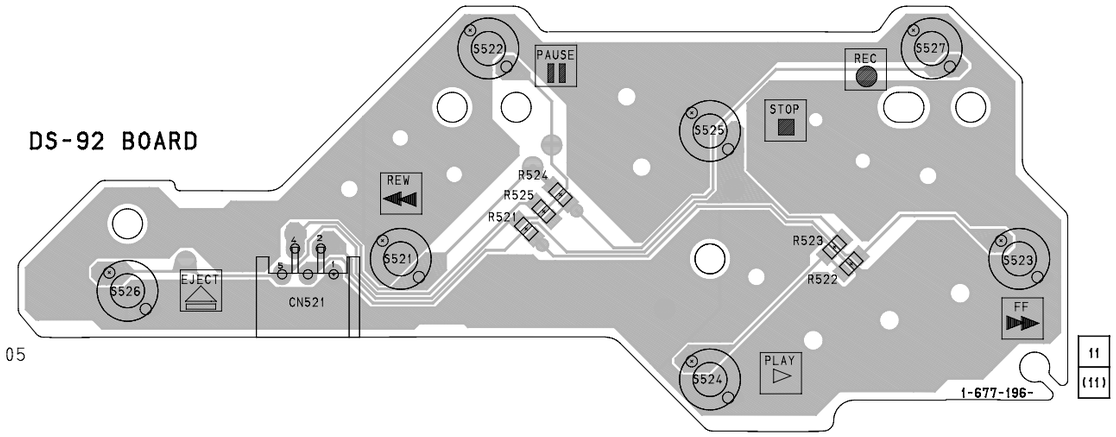


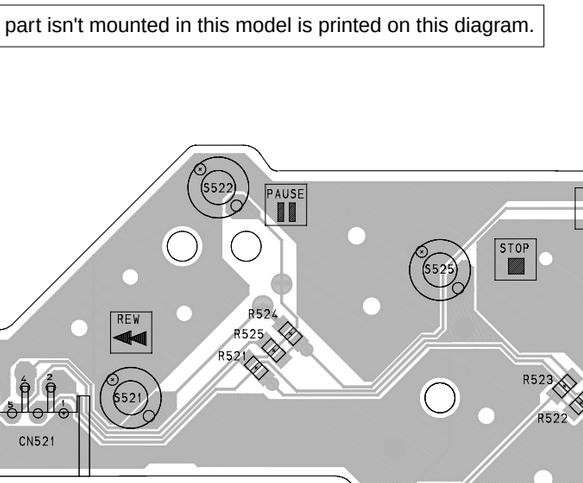


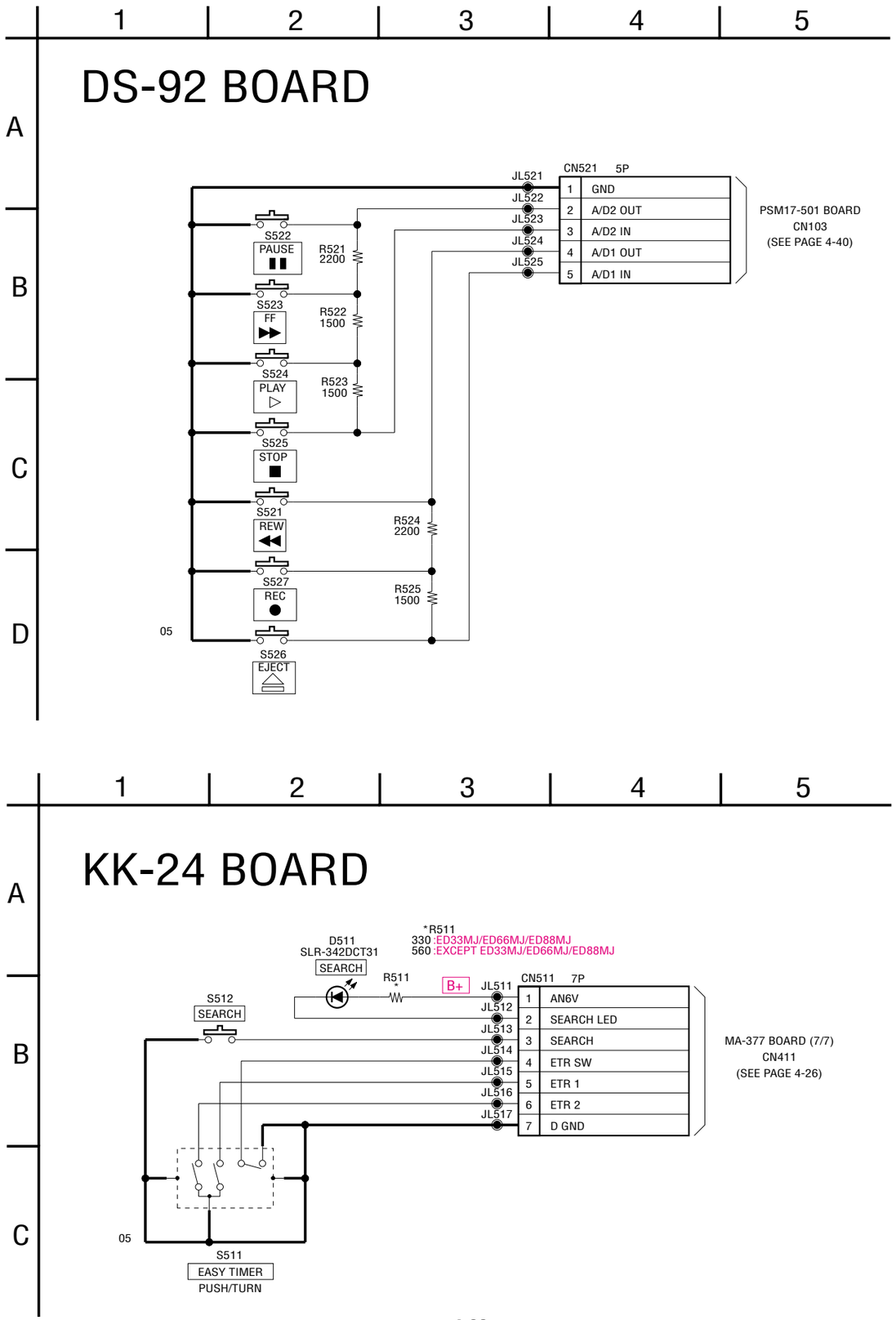
DS-92 (MODE CONTROL), KK-24 (EASY TIMER/SEARCH) PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

– Ref. No.: DS-92 board, KK-24 board; 1,000 series –

There are few cases that the part isn't mounted in this model is printed on this diagram.



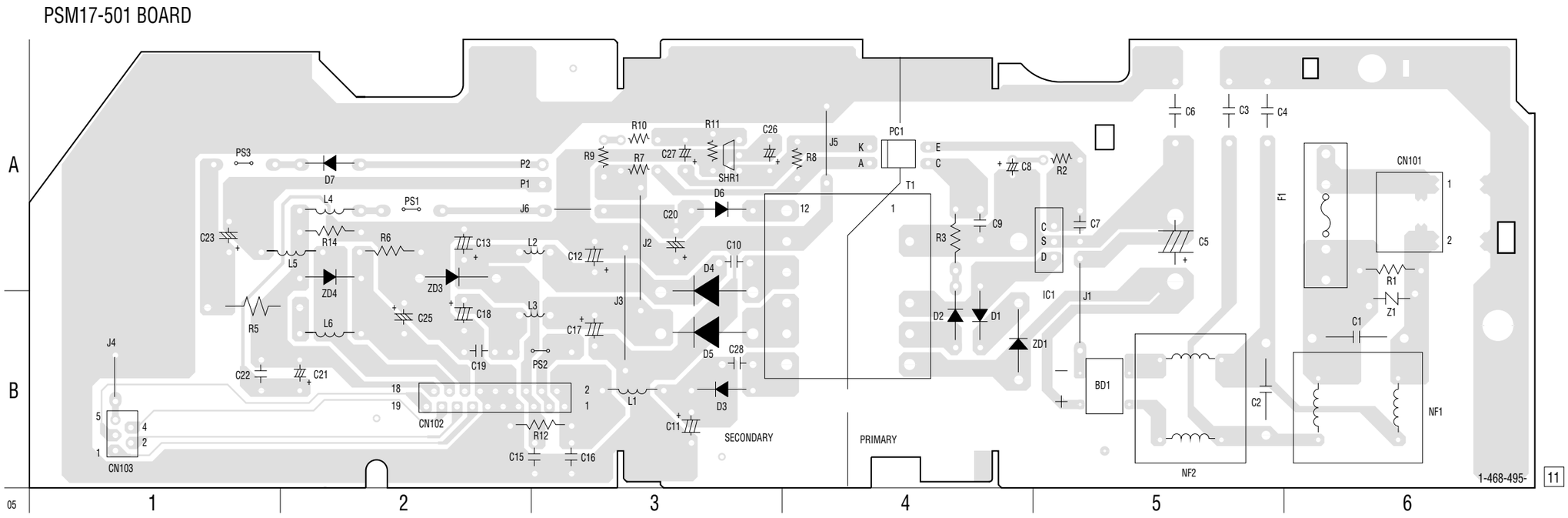




PSM17-501 (POWER SUPPLY) PRINTED WIRING BOARD

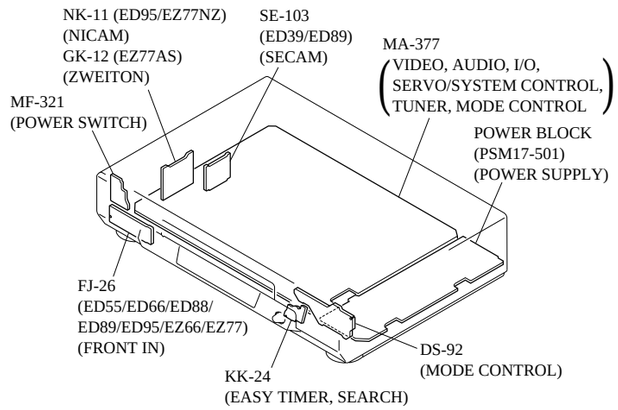
– Ref. No.: PSM17-501 board; 4,000 series –

There are few cases that the part isn't mounted in this model is printed on this diagram.



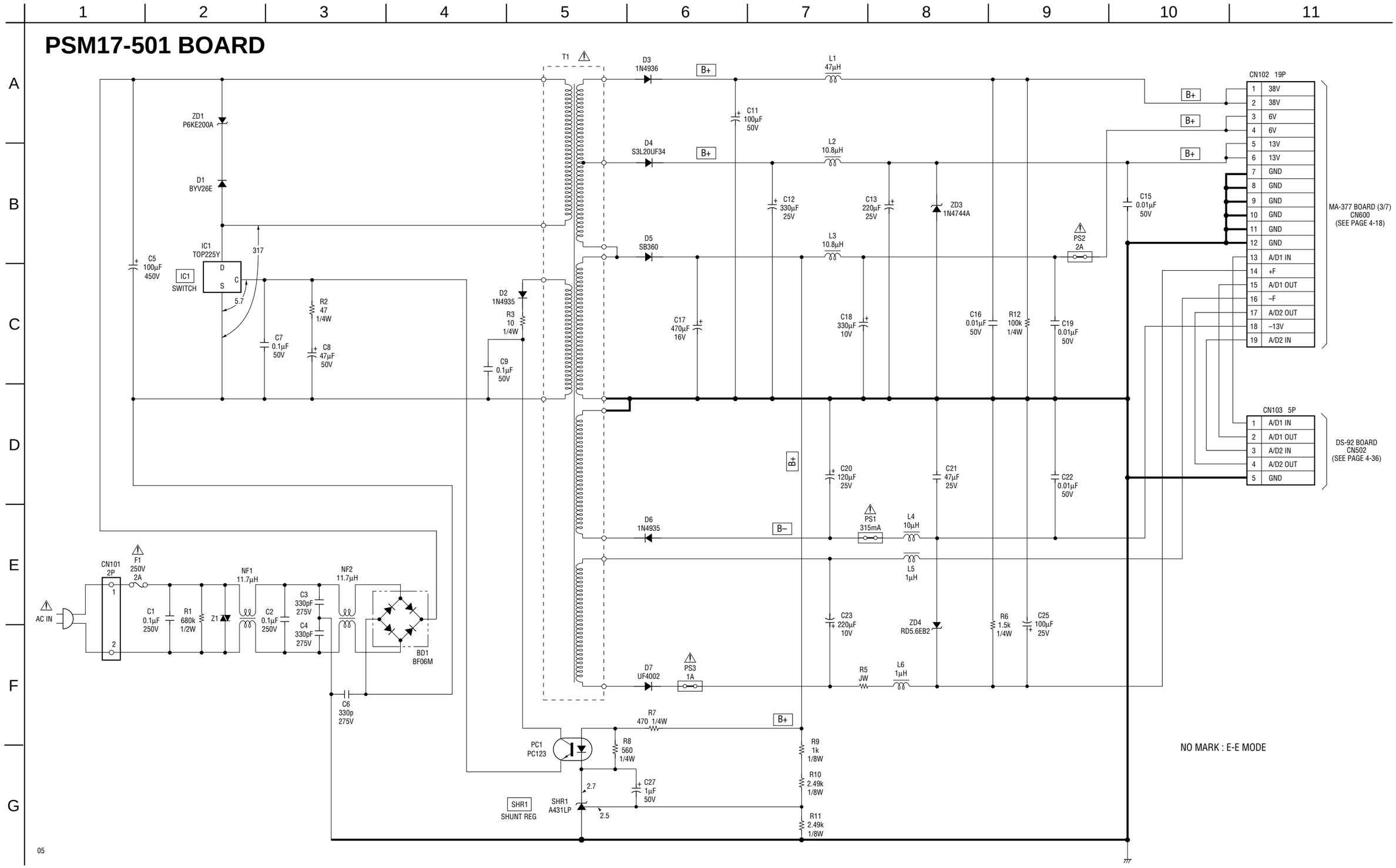
PSM17-501 BOARD

CN101	A-6
CN102	B-2
CN103	B-3
D1	B-4
D2	B-4
D3	B-3
D4	B-3
D5	B-3
D6	A-3
D7	A-2
ZD1	B-4
ZD3	A-2
ZD4	A-2
IC1	A-5
SHR1	A-3



PSM17-501 (POWER SUPPLY) SCHEMATIC DIAGRAM

– Ref. No.: PSM17-501 board; 4,000 series –



Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

5-1. SYSTEM CONTROL – VIDEO BLOCK INTERFACE (MA-377 BOARD IC101)

Signal	Pin No.	I/O	STOP/ FF/ REW	TAPE THREAD-ING	TAPE UNTHREAD-ING	PB	PB • PAUSE	SLOW	× 2	CUE	REVIEW	REC	REC • PAUSE
RF SWP	MA-377 IC101㉔	O	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1
QVD	MA-377 IC101㉗	O	L	L	L	*2	*3	*3	*3	*3	*3	L	L
C SYNC	MA-377 IC101㊿	I	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4

∗1. 25 Hz pulse with 50% duty cycle. Synchronized with rotation of drum.
∗2. Normal PB “L”. V period “H” pulse when ×1.
∗3. V period “H” pulse.
∗4. Composite sync signal (positive polarity).

5-2. SYSTEM CONTROL – SERVO PERIPHERAL CIRCUIT INTERFACE (MA-377 BOARD IC101)

Signal	Pin No.	I/O	STOP	FF	REW	TAPE THREAD-ING	TAPE UNTHREAD-ING	PB	PB • PAUSE	SLOW	× 2	CUE	REVIEW	REC	REC • PAUSE
CAP QR	MA-377 IC101㊹	O	Hi-Z	Hi-Z	Hi-Z	Hi-Z	Hi-Z	Hi-Z	Hi-Z	*2	Hi-Z	Hi-Z	Hi-Z	Hi-Z	Hi-Z
DRUM PG	MA-377 IC101㊴	I	*3	*1	*1	*4	*4	*1	*1	*1	*1	*1	*1	*1	*1
DRUM FG	MA-377 IC101㊳	I	*3	*6	*6	*4	*4	*6	*6	*6	*6	*6	*6	*6	*6
CAP FG	MA-377 IC101㊵	I	H/L	*5	*5	*4	*4	*5	H/L	*5	*5	*5	*5	*5	H/L
CAP VS	MA-377 IC101㉕	O	*7	*7	*7	*7	*7	*8	*7	*7	*8	*8	*8	*8	*7
DRUM VS	MA-377 IC101㉖	O	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9

∗1. 25 Hz (PAL), 30 Hz (NTSC) pulse.
∗2. Pulse at tape running.
∗3. “L” when drum rotation stop.
∗4. Unstable period pulse.
∗5. Pulse of period in proportion to tape speed.
∗6. 300 Hz (PAL), 360 Hz (NTSC) pulse.
∗7. Pulse at tape running.
∗8. Approx. 2 msec period “H” or “L” pulse.
∗9. Approx. 1.5 msec period “H” or “L” pulse.

5-3. SYSTEM CONTROL – MECHANISM BLOCK INTERFACE (MA-377 BOARD IC101)

Signal	Pin No.	I/O	EJECTED	CASSETTE LOADING	CASSETTE UNLOADING	TAPE THREAD-ING	TAPE UNTHREAD-ING	STOP	FF	REW	PB	PB • PAUSE	SLOW	× 2	CUE	REVIEW	REC	REC • PAUSE
CAM	MA-377 IC101㉝	O	Hi-Z	H	L	H	L	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7
MODE 1	MA-377 IC101㉞	I	H	L	L	*1	*1	H	H	H	H	H	H	H	H	L	H	H
MODE 2	MA-377 IC101㉟	I	H	L	L	*1	*1	H	H	H	L	L	L	L	L	L	L	L
MODE 3	MA-377 IC101㊱	I	L	L	L	*1	*1	H	L	L	L	L	L	L	L	H	L	L
MODE 4	MA-377 IC101㊲	I	L	H	H	*1	*1	L	H	H	L	L	L	L	L	L	L	L
REC PRF	MA-377 IC101㊺	I	H	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2
T REEL	MA-377 IC101㊽	I	H/L	H/L	H/L	H/L	H/L	H/L	*3	*3	*3	H/L	*3	*3	*3	*3	*3	H/L
S REEL	MA-377 IC101㊾	I	H/L	H/L	H/L	*3	*3	H/L	*3	*3	*3	H/L	*3	*3	*3	*3	*3	H/L
END-LED	MA-377 IC101㉔	O (O.D)	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4
$\overline{\text{CAP RVS}}$	MA-377 IC101㉓	I	L			H	L	H/L	H	L	H	H	H	H	H	L	H	H
T SENS	MA-377 IC101⑫	I	*4	*4	*4	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6
S SENS	MA-377 IC101⑪	I	*4	*4	*4	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6

∗1. Uncertainty.
∗2. “L” when erasing protection tab is bent, “H” when not bent.
∗3. Pulse of period in proportion to reel rotating speed.
∗4. Approx. 2 msec period “H” pulse.
∗5. Pulse at tape running.
∗6. Normally “L”. 2 msec period “H” pulse when tape top or tape end is detected.
∗7. When transition to UNLOADING direction: L.
When transition to LOADING direction: H.
When CAM motor is stopped: Hi-Z.

5-4. SYSTEM CONTROL – AUDIO BLOCK INTERFACE (MA-377 BOARD IC101)

Signal	Pin No.	I/O	STOP/ FF/ REW	TAPE THREAD-ING	TAPE UNTHREAD-ING	PB	PB • PAUSE	SLOW	× 2	CUE	REVIEW	REC	REC • PAUSE
AU RF	MA-377 IC101⑭	I	AF RF envelope signal input terminal for automatic tracking.										
A MUTE	MA-377 IC101⑲	O (O.D)	Hi-Z	Hi-Z	Hi-Z	Hi-Z	H	H	H	H	H	L	L
AF SWP	MA-377 IC101㉓	O	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1
$\overline{\text{FULL ERASE}}$	MA-377 IC101㉛	O (O.D)	H	H	H	H	H	H	H	H	H	L	H
REC P	MA-377 IC101㉜	O	L	L	L	L	L	L	L	L	L	H	L
NAPB	MA-377 IC101㉑	O	L	L	L	L	L	L	L	L	L	H	L

*1. 25 Hz (PAL), 30 Hz (NTSC) 50% duty pulse approx. 5 msec delayed from RF SW P.

5-5. SERVO/SYSTEM CONTROL, OSD MICROPROCESSOR PIN FUNCTION (MA-377 BOARD IC101)

Pin No.	Pin Name	I/O	Function
1	SW1	O	Tuner system control-1 signal output
2	AN GND	–	Analog ground
3	APC ERROR	I	APC error voltage signal input
4	ETR1	I	Easy timer knob pulse1 signal input
5	FUNC. KEY2	I	Function key analog voltage signal input
6	TU AFT	I	Auto fine tuning signal input
7	FUNC. KEY1	I	Function key analog voltage signal input
8	POWER FAIL	I	Power failure detect signal input
9	ETR2	I	Easy timer knob pulse2 signal input
10	DEST	I	Destination set signal input
11	S SENS	I	Supply end sensor signal input
12	T SENS	I	Take up end sensor signal input
13	VIDEO RF	I	Video RF envelop signal input
14	AU RF	I	Hi-Fi audio envelop signal input
15	UN 5V	–	Power supply analog 5V
16	RESET	I	Reset signal input
17	SW 2	O	Tuner system control 2 signal output
18	PAL	O	“H”: PAL (video block control signal output)
19	OSD MIX	O	“H”: MESECAM mode set
20	SP	–	Not used
21	NAPB	O	Normal audio PB signal output
22	VCC	–	Power supply unswitch 5V
23	AF SWP	O	AF switching pulse signal output
24	RF SWP	O	RF switching pulse signal output
25	CAP VS	O	Capstan error signal output
26	DRUM VS	O	Drum motor error signal output
27	QVD	O	Quasi VD pulse signal output
28	C ROTARY	–	Not used
29	H.AMPSW	O	“H”: A-DUB mode (CTL amp. gain control signal output)
30	COMP	–	Not used
31	CTL (+)	I/O	CTL head signal input/output (REC mode)
32	CTL (-)	I/O	CTL head signal input/output (REC mode)
33	VSS (SERVO)	–	Servo ground
34	CTL-AMP1	I	CTL amp. control signal input (gain set)
35	CTL-AMP2	I	CTL amp. control signal input (gain set)
36	CTL-AMP3	I	CTL amp. control signal input (gain set)
37	CTL-AMP OUT	O	CTL amp. control signal output (for check)
38	DRUM FG	I	Drum FG schmitt amp. input
39	DRUM PG	I	Drum PG schmitt amp. input
40	CAP FG	I	Capstan FG schmitt input
41	VCC (SERVO)	–	Power supply unswitch 5V
42	VCC (OSD)	–	Power supply OSD 5V
43	VIDEO IN	I	Composite video signal input
44	VREF	I	Reference bias and clamp bias power signal input
45	VIDEO OUT	O	Composite video signal output
46	CHAR BIAS	–	Not used
47	AFC LPF	I	AFC LPF signal input
48	AFC OSC	I	AFC oscillation signal input
49	VSS (OSD)	–	OSD ground
50	DOSC IN	I	OSC dot clock oscillator signal input

Pin No.	Pin Name	I/O	Function
51	DOSC OUT	O	OSC dot clock oscillator signal output
52	4FSC OUT	O	OSC 4fsc oscillator terminal signal output
53	4FSC IN	I	OSC 4fsc oscillator terminal signal input
54	CSYNC	I	Composite sync signal input
55	REC PRF	I	Erasing protection tab. cassette in detection signal input
56	IIC DATA	O	EEP ROM, Hi-Fi IC, RR IC, tuner/serial communication data signal output
57	IIC CLOCK	O	EEP ROM, Hi-Fi IC, RR IC, tuner/serial communication clock signal output
58	DRUM QR	O	Drum motor step driving signal output
59	PB	–	Not used
60	AF REC P	O	“L”: output when Hi-Fi audio REC pause (Not used)
61	TV/VTR	–	Not used
62	IIC CLOCK (VIDEO)	O	Video, video amp. serial communication clock signal output
63	IIC DATA (VIDEO)	O	Video, video amp. serial communication data signal output
64	BLUE BACK	O	OSD block control signal output
65	APC PWM	O	APC PWM signal output
66	CAP TRQ PWM	O	Capstan TRQ PWM signal output
67	$\overline{\text{SECAM ON}}$	O	“L”: SECAM mode set during PB
68	TEST	I	Fixed to ground
69	32kHz (OUT)	O	Timer clock terminal (32kHz) output
70	32kHz (IN)	I	Timer clock terminal (32kHz) input
71	VSS	–	Ground
72	10MHz (IN)	I	System clock terminal (10MHz) input
73	10MHz (OUT)	O	System clock terminal (10MHz) output
74	END LED	O	Top/end LED on/off control signal output
75	POWER CONT	O	Power supply control signal output
76	RR CLK	–	Not used
77	RR DATA	–	Not used
78	OSD SELECT	O	OSD X' tal select (PAL/NTSC) signal output
79	A MUTE	O	“H”: audio mute signal output
80	WRITE CONT	O	EEP ROM write timing control signal output
81	IN SEL	O	Line-input selection control signal output
82	REMOCON	I	Remote control (SIRCS) signal input
83	CAM	O	CAM motor control signal output
84	MODE1	I	Mechanism section CAM encoder data 1 input
85	MODE2	I	Mechanism section CAM encoder data 2 input
86	MODE3	I	Mechanism section CAM encoder data 3 input
87	MODE4	I	Mechanism section CAM encoder data 4 input
88	T REEL	I	T side reel FG input
89	S REEL	I	S side reel FG input
90	FLD CS	O	FIP driver chip select signal output
91	$\overline{\text{FULL ERASE}}$	O	Full erase head on/off control signal output
92	REC P	O	“L”: output when REC pause
93	$\overline{\text{CAP RVS}}$	O	Capstan reverse control signal “H”: when reverse
94	CAP QR	O	Capstan step driving signal output
95	S CLOCK	O	Serial communication clock signal output
96	S IN	I	Serial communication data signal input
97	S OUT	O	Serial communication data signal output
98	PLL CLOCK	O	Tuner PLL clock signal output
99	TU ENABLE	O	Tuner PLL chip select signal output
100	PLL DATA	O	Tuner PLL data signal output

5-6. NICAM PROCESSOR PIN FUNCTION (NK-11 BOARD IC1)

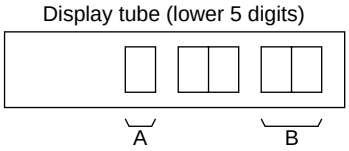
Pin. No.	Pin Name	I/O	Function
1	OUT L	O	Analog signal output left
2	OUT R	O	Analog signal output right
3	VDD A1	–	Analog power supply 5V; DAC circuitry
4	VSS A1	–	Analog ground; DAC circuitry
5	VSS D1	–	Digital ground; DAC circuitry
6	VDD D1	–	Digital power supply 5V; DAC circuitry
7	VSS D2	–	Digital ground; DSP part
8	VDD D2	–	Digital power supply 5V; DSP part
9	TP2	I	Additional test pin 2; connected to ground for normal operation
10	N.C.	–	Not used
11	TP1	I	Additional test pin 1; connected to ground for normal operation
12	N.C.	–	Not used
13	N.C.	–	Not used
14	V TUNE	O	Tuning voltage output for crystal oscillator
15	XTAL I	I	Crystal oscillator input
16	XTAL O	O	Crystal oscillator output
17	TEST2	I	Test pin 2; connected to ground for normal operation
18	I REF	I	Resistor for reference current generation; front end circuitry
19	N.C.	–	Not used
20	VSS A2	–	Analog ground; analog front end circuitry
21	VDD A2	–	Analog power supply 5V; analog front end circuitry
22	TEST1	I	Test pin 1; connected to ground for normal operation
23	SIF2	I	Sound IF input 2
24	V REF1	I	Reference voltage; analog front end circuitry
25	SIF1	I	Sound IF input 1
26	C RST		Capacitor for power-on reset
27	VSS D3	–	Digital ground; front end circuitry
28	VDD D3	–	Digital power supply 5V; front end circuitry
29	SCL	I	Serial communication clock signal input
30	SDA	I	Serial communication data signal input
31	N.C.	–	Not used
32	N.C.	–	Not used
33	N.C.	–	Not used
34	N.C.	–	Not used
35	VDD D4	–	Digital power supply 5V; demodulator circuitry
36	VSS D4	–	Digital ground; demodulator circuitry
37	N.C.	–	Not used
38	N.C.	–	Not used
39	EXTI R	I	External audio input right channel
40	EXTI L	I	External audio input left channel
41	V REF2	I	Analog reference voltage digital-to-analog converter and operational amplifiers
42	N.C.	–	Not used
43	VDD A3	–	Analog power supply 5V; operational amplifiers
44	VSS A3	–	Analog ground; operational amplifiers

5-7. ZWEITON PROCESSOR PIN FUNCTION (GK-12 BOARD IC001)

Pin. No.	Pin Name	I/O	Function
1	OUT L	O	Audio left signal output
2	OUT R	O	Audio right signal output
3	CDE1	–	De-emphasis 1 capacitor
4	N.C.	–	Not used
5	N.C.	–	Not used
6	CDE2	–	De-emphasis 2 capacitor
7	A GND	–	Analog ground
8	AF1 I	I	Audio 1 signal input
9	N.C.	–	Not used
10	AF1 O	O	Audio 1 signal output
11	N.C.	–	Not used
12	N.C.	–	Not used
13	AFR	I	AF 1/2 signal return
14	LF1	–	Loop filter 1
15	XTAL	I	4MHz reference input
16	N.C.	–	Not used
17	N.C.	–	Not used
18	LF2	–	Loop filter 2
19	N.C.	–	Not used
20	N.C.	–	Not used
21	MAD	I	Programmable address bit (module address)
22	N.C.	–	Not used
23	N.C.	–	Not used
24	CAF1	O	AF1 capacitor
25	IF INT	I	IF intercarrier input
26	CAF2	O	AF2 capacitor
27	D GND	–	Digital ground
28	VCC	–	Power supply 5V
29	SCL	I	Serial communication clock input
30	SDA	I/O	Serial communication data input and output
31	LPF	–	Pilot loop filter
32	AF2 O	O	Audio 2 signal output
33	AF2 I	I	Audio 2 signal input
34	CTR IG	–	Trigger capacitor
35	CID	–	Identification capacitor
36	N.C.	–	Not used
37	P1	O	Output port 1
38	EXT M	I	External audio input monaural channel
39	EXTI R	I	External audio input right channel
40	EXTI L	I	External audio input left channel
41	V REF	I	Analog reference voltage digital-to-analog converter and operational amplifiers
42	P2	O	Output port 2
43	OUT M	O	Audio monaural signal output
44	N.C.	–	Not used

SECTION 6
ERROR CODES

This set displays an error code, and a mode code in case of error on the display tube, if the operation stopped by error.
The following provides description concerned.



A: Error code ..... Table 6-1
B: Mode code in case of error ..... Table 6-2

These codes are displayed at lower 5-digit positions of display tube.
In this case, " : " between digits is not displayed.

Table 6-1. Error Codes

Code	Description
0	NO ERROR
1	CAM ENCODER ERROR, LOAD DIRECTION
2	CAM ENCODER ERROR, UNLOAD DIRECTION
3	T REEL ERROR
4	S REEL ERROR
5	CAPSTAN ERROR
6	DRUM ERROR
7	INITIALIZE ERROR
8	CASSETTE UNLOADING ERROR
9	RESERVED

Table 6-2. Mode Codes in Case of Error

Code	Description
0	EJECT (POWER ON)
1	EJECT (POWER OFF)
2	UNLOAD STOP
3	STOP (POWER ON)
4	POWER OFF (CASSETTE IN)
5	F. FWD
6	REW
7	LOW SPEED F. FWD
8	LOW SPEED REW
9	STANDBY
10	REC
11	REC (VISS)
12	REC PAUSE
13	PLAY
14	A. DUB
15	A. DUB PAUSE
16	CUE
17	REV
18	STILL (MECHA FWD)
19	FWD FRAME BY FRAME (FWD SLOW)
20	STILL (MECHA RVS)
21	RVS FRAME BY FRAME (RVS SLOW)

SECTION 7
ADJUSTMENTS

During the adjustment, see the Parts Arrangement Diagram for Adjustments on Page 7-6.

7-1. MECHANICAL ADJUSTMENTS

Refer to the SERVICE MANUAL of VHS MECHANICAL ADJUSTMENT VI.

7-2. ELECTRICAL ADJUSTMENTS

2-1. PRE-ADJUSTMENT PREPARATIONS

Necessary items and indications for total adjustment of electric circuit of this machine will be described in this chapter.

2-1-1. Instruments to be Used

1) Color TV
2) Oscilloscope 1 or 2 phenomena, band more than 30 MHz, delay mode, as provided.
3) NTSC pattern generator
4) PAL pattern generator
5) Digital voltmeter
6) Audio level meter
7) Audio noise meter
8) Audio generator
9) Attenuator
10) Alignment tape
    Part Code: 8-192-605-36 KRV-51P (PAL)
    Part Code: 8-192-605-32 KRV-51N2 (NTSC)

2-1-2. Connection

Unless otherwise specified, connect and adjust the measuring instruments as shown in the following diagram.

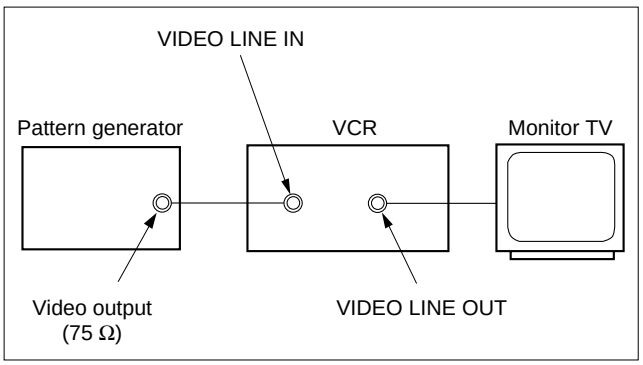


Fig. 7-2-1

2-1-3. Set-up of Adjustment

In this adjustment, PAL or NTSC pattern generator is connected with LINE input signal terminal. When checking with tuner, connected AERIAL terminal. Check that the amplitudes of video signal SYNC signal, of picture portions, and of burst signals are flat at approximately 0.3, 0.7 and 0.3 V, respectively, and that the level ratio of the burst signal and "red" signal are 0.30: 0.66. Fig. 7-2-2. shows video signals (color bars) used in adjusting the video section.

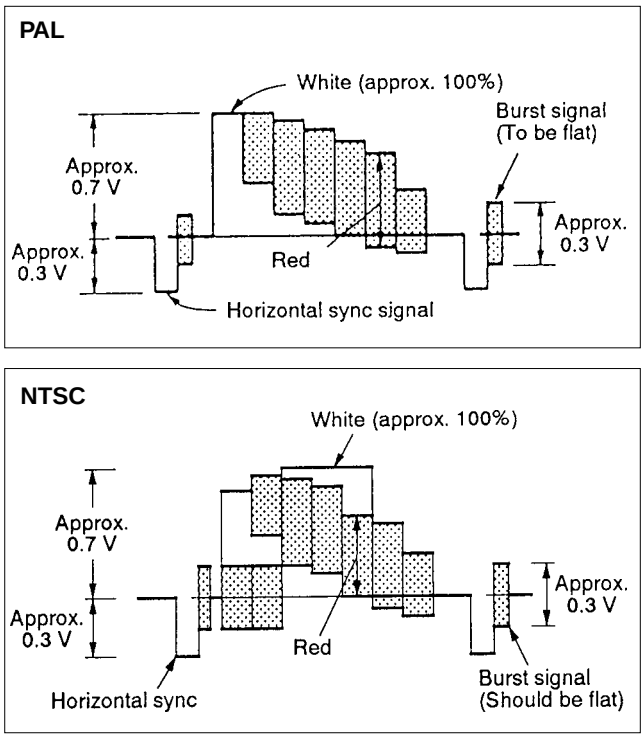


Fig. 7-2-2

2-1-4. Alignment Tapes [Alignment Tape (KRV-51N2/KRV-51P)]

	Mode	Time	Video signal	Audio signal (HiFi/Normal)
1	SP	Seven minutes	Color bar	400 Hz
2	SP	Three minutes	Monoscope	
3	EP	Seven minutes	Color bar	
4	EP	Three minutes	Monoscope	

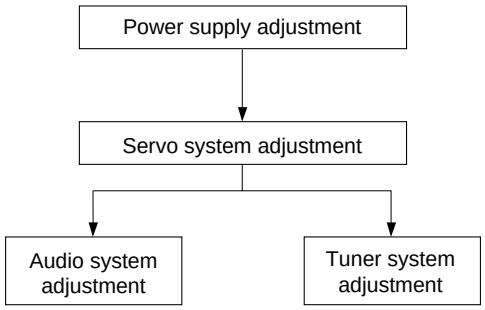
2-1-5. Specified I/O Level and Impedance

Input/output terminal

Video inputs	LINE IN : phono jack 1 Vp-p, 75 Ω, unbalanced, sync negative
Audio inputs	LINE IN : phono jacks 47 kW, –7.5 dBs (0 dBs = 0.775 Vrms) More than 10 kW, –4 dBs
Video outputs	LINE OUT: phono jack 1 Vp-p, 75 Ω, unbalanced, sync negative
Audio outputs	LINE OUT: phono jacks –7.5 dBs at load impedance 47 kΩ Output impedance : less than 10 Ω

2-1-6. Adjusting Sequence

Make the electrical adjustment in the following sequence.



2-2. POWER SUPPLY ADJUSTMENT

2-2-1. Power Supply Check (PSM17-501 BOARD)

Mode	E-E
Measuring Instrument	Digital voltmeter
+F, –F check	
Measurement Point	Pin ⑭ (+F), Pin ⑯ (–F) of CN102
Specified Value	2.5 ± 0.4 V
–13 V check	
Measurement Point	Pin ⑱ of CN102
Specified Value	–11.75 ± 1.25 V
+6 V check	
Measurement Point	Pin ③, ④ of CN102
Specified Value	5.9 ± 0.2 V
+13 V check	
Measurement Point	Pin ⑤, ⑥ of CN102
Specified Value	13.8 ± 1.2 V
+38 V check	
Measurement Point	Pin ①, ② of CN102
Specified Value	Max 40 V

Checking Method:

1) Confirm that each voltage meets its specified value.

2-3. SERVO SYSTEM ADJUSTMENT

2-3-1. RF Switching Position Adjustment (MA-377 BOARD)

Purpose:

Adjust the interval between A ch and B ch of tape playback output.

Improve the interchangeability with other tapes and sets.

When it is out of order, the interval appears on the screen, the screen is disturbed.

Mode	PB
Signal	Alignment tape SP mode color bar
Measurement Point	CH1: Pin ② of CN202 CH2: Pin ③ of CN202 (RF SWP)
Measuring Instrument	Oscilloscope
Specified Value	6.5 ± 0.5 H (416 ± 32 µsec) PAL 6.5 ± 0.5 H (410 ± 32 µsec) NTSC

Adjusting Method:

1) Connect MA-377 board JS401 to the GND for about 1 second to activate the RF switching position adjustment mode.
2) Check appear “A P” on FL display.
3) Using the channel + and – buttons, adjust to 6.5 ± 0.5 H.
4) Press the pause button.

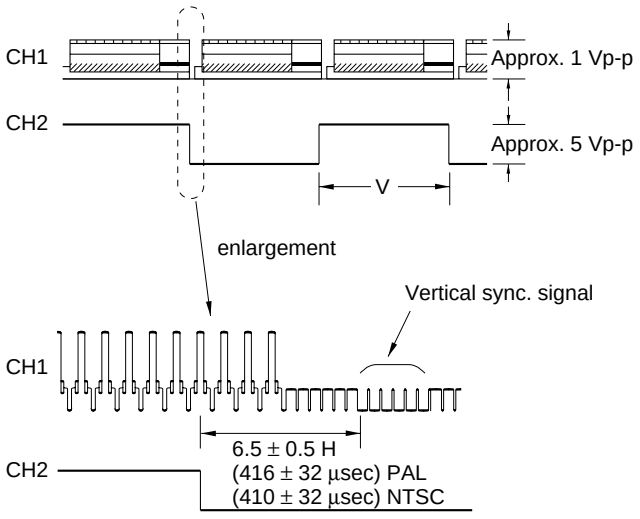


Fig. 7-2-3.

2-4. AUDIO SYSTEM ADJUSTMENTS

• Adjust both Lch and Rch.

[Connection]

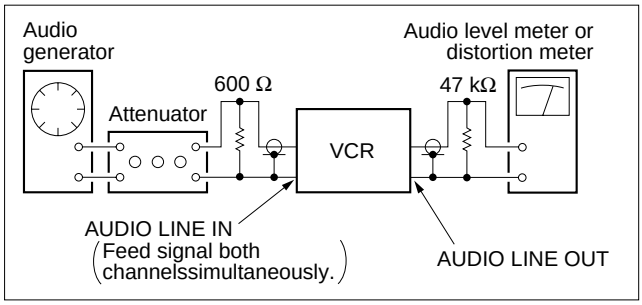


Fig. 7-2-4.

2-4-1. Hi-Fi Audio System Adjustment (SLV-ED85/ED88/ED89/ED95/EZ66/EZ77)

• Set switches and knobs to the following positions to make adjustment unless otherwise specified.
INPUT SELECT switch ..... LINE
AUDIO MONITOR ..... STEREO

[Adjustment Sequence]

1. **AF Switching Position Adjustment**
2. **Frequency Response Check**
3. **Overall Level Characteristic and Distortion Factor Check**
4. **Overall S/N Check**

1. AF Switching Position Adjustment (MA-377 BOARD)

Purpose:

Adjust the interval between A CH and B CH of tape playback output. Improve the interchangeability with other tapes and sets. When it is out of order, noisy sound is increased and big noise is heard.

Mode	PB
Signal	Alignment tape SP mode color bar
Measurement point	CH1: Pin ③ of CN202 CH2: Pin ① of CN202
Measuring Instrument	Oscilloscope
Specified Value	Fig. 7-2-5

Adjusting Method:

1) Connect MA-377 board JS401 to the GND for about 1 second to activate the RF switching position adjustment mode.
2) Press the PLAY button to activate the AF switching position adjustment mode.
3) Check appear “A H” on FL display.
4) Using the channels + and – buttons, minimize a chipped portion. At this time, confirm that a noisy sound is not heard.
5) Press the pause button.

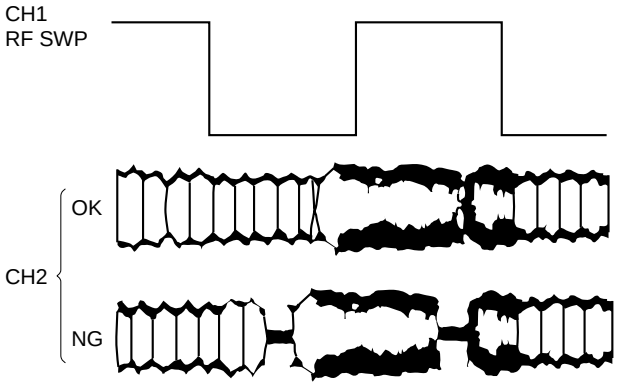


Fig. 7-2-5.

2. Frequency Response Check

Purpose:

Confirm that the frequency characteristic is within the specification.

Mode	REC and PB (SP, LP mode)
Signal	400 Hz, –17.5 dBs 20 Hz, –17.5 dBs 20 kHz, –17.5 dBs
Measurement point	Audio output terminal
Measurement equipment	Audio level meter
Specified value	0 ± 2 dB

Note: Tape path adjustment must have been completed.

Confirmation Method:

1) Supply a signal of 400 Hz, –17.5 dBs to both L and R channels of Audio Line Input.
2) Connect the audio level meter to the Audio Line Output.
3) Adjust the attenuator so that the audio level meter will indicate –17.5 dBs.
4) Make recording.
5) Set an audio line input signal to 20 Hz and make recording.
6) Set an audio line input signal to 20 kHz and make recording.
7) Playback a recorded portion, and measure output levels at 400 Hz and 20 Hz and 20 kHz.
8) Confirm that the 20 Hz and 20 kHz playback output level within a range of the 400 Hz playback output level 0 ± 2 dB.

3. Overall Level Characteristic and Distortion Factor Check

Purpose:
Check the record level, play level, and distortion factor against the reference input.

Mode	REC and PB (SP mode)
Signal	400 Hz, –7.5 dBs
Measurement point	Audio output terminal
Measurement equipment	Audio level meter and distortion factor meter
Specified value	Playback level: –7.5 ± 2.0 dBs Distortion factor: 1% or less

Confirmation Method:
1) Supply an audio signal of 400 Hz, –7.5 dBs simultaneously to both L and R channels of Audio Line Input.
2) Make recording
3) Play back a recorded portion.
4) Confirm that a playback level is –7.5 ±2.0 dBs.
5) Confirm that a distortion factor is within 1%.

4. Overall S/N Check

Purpose:
Confirm that the S/N is within the specification.

Mode	REC and PB (SP mode)
Signal	Short
Measurement point	Audio output terminal
Measurement equipment	Audio noise meter
Specified value	–67.5 dBs or less

Confirmation Method:
1) Connect both L and R channels of audio line input to the GND.
2) Start recording.
3) Play the recorded part to confirm that the noise is below –67.5 dBs.

2-4-2. Normal Audio System Adjustment

- Make adjustment in the SP mode, unless otherwise specified. Use a normal VHS cassette for an adjustment tape.
- Set AUDIO MONITOR to normal.

[Adjustment Sequence]

1. **ACE Head Adjustment**
2. **E-E Output Level Check**
3. **Frequency Response Check**
4. **Overall Level Characteristic and Distortion Factor Check**
5. **Overall S/N Check**

1. ACE Head Adjustment

Refer to the SERVICE MANUAL of VHS MECHANICAL ADJUSTMENT VI.

2. E-E Output Level Check (SLV-ED15/ED25/ED33/ED39/ED55/ED66/ED85/ED88/ED89/EZ11/EZ22/EZ44/EZ66/EZ77)

Purpose:
Confirm that the output level against the reference input is within the specification.

Mode	E-E
Signal	L, R: 400 Hz, –7.5 dBs
Measurement point	Audio output terminal
Measurement equipment	Audio level meter
Specified value	–7.5 ± 2.0 dBs

Confirmation Method:
1) Simultaneously input a signal of 400 Hz, –7.5 dBs to both L and R channels of Audio Line Input.
2) Confirm that the audio output level is –7.5 ± 3.0 dBs. (This level only can appear with mono models)

3. Frequency Response Check

Purpose:
Confirm that the frequency characteristic is within the specification.

Mode	REC and PB (SP mode)
Signal	400 Hz, –17.5 dBs 7 kHz, –17.5 dBs
Measurement point	Audio output terminal
Measurement equipment	Audio level meter
Specified value	0 ± 4 dB

Tape path adjustment must have been completed.

Confirmation Method:
1) Supply a signal of 400 Hz, –17.5 dBs to both L and R channels of Audio Line Input.
2) Connect the audio level meter to the Audio Line Output.
3) Adjust the attenuator so that the audio level meter will indicate –17.5 dBs.
4) Make recording in the SP mode.
5) Set an audio line input signal to 7 kHz and make recording.
6) Playback a recorded portion, and measure output levels at 400 Hz and 7 kHz.
7) Confirm that the 7 kHz playback output level within a range of the 400 Hz playback output level 0 ± 4 dB.

4. Overall Level Characteristic and Distortion Factor Check

Purpose:
Check the record level, play level, and distortion factor against the reference input.

Mode	REC and PB (SP mode)
Signal	400 Hz, –7.5 dBs
Measurement point	Audio output terminal
Measurement equipment	Audio level meter and distortion factor meter
Specified value	Playback level: –7.5 ± 4.0 dBs Distortion factor: 4% or less

Confirmation Method:
1) Supply an audio signal of 400 Hz, –7.5 dBs simultaneously to both L and R channels of Audio Line Input.
2) Make recording
3) Play back a recorded portion.
4) Confirm that a playback level is –7.5 ± 4.0 dBs. (mono audio)
5) Confirm that a distortion factor is less than 4%.

5. Overall S/N Check

Purpose:
Confirm that the S/N is within the specification.

Mode	REC and PB (SP mode)
Signal	Short
Measurement point	Audio output terminal
Measurement equipment	Audio noise meter
Specified value	–46.0 dBs or less

Confirmation Method:
1) Connect both L and R channels of audio line input to the GND.
2) Start recording.
3) Play the recorded part to confirm that the noise is below –46.0 dBs.

2-5. TUNER SYSTEM ADJUSTMENT

[Connection]

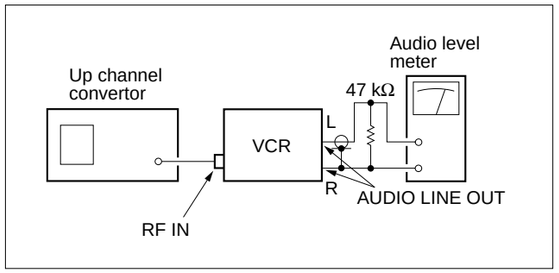


Fig. 7-2-6

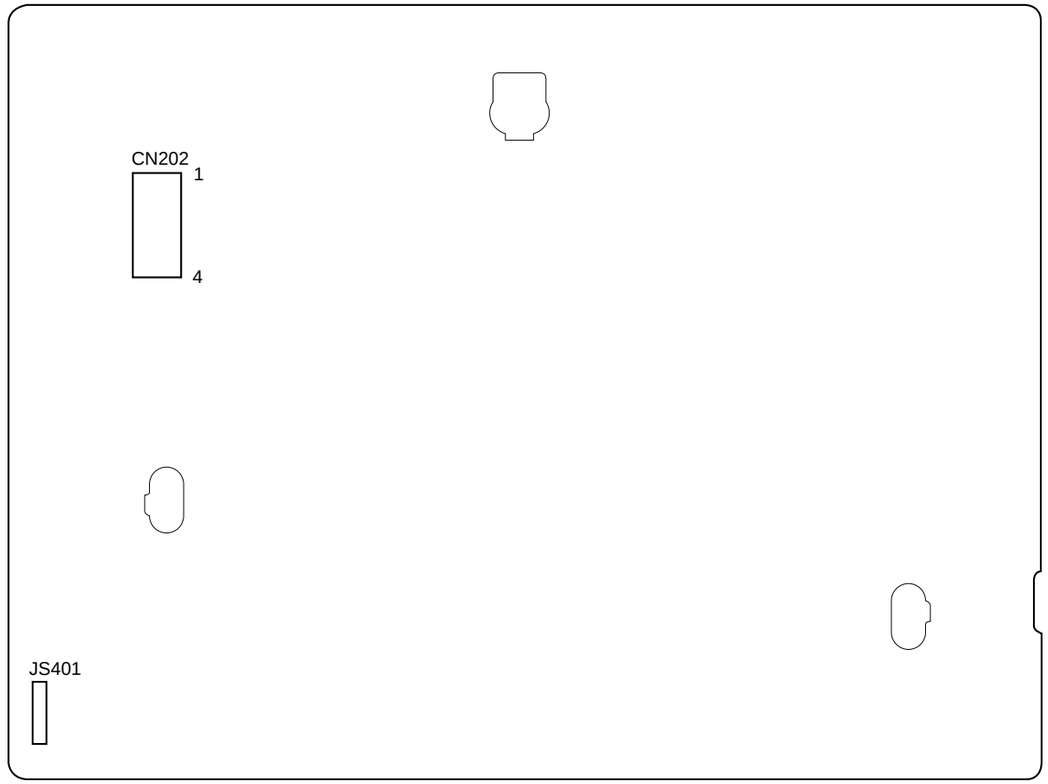
2-5-1. Separation Adjustment (SLV-EZ77AS)

Purpose:
Mixed audio signal separate Lch and Rch.

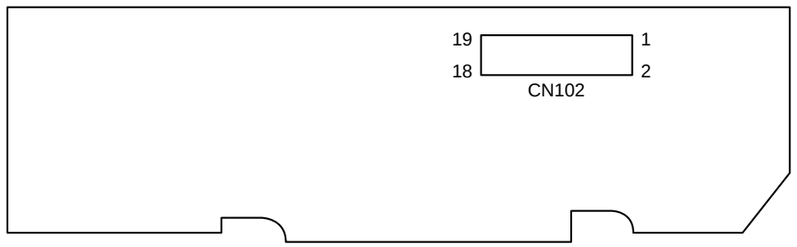
Mode	E-E
Signal	VIDEO: color bar (White 100% modulation) AUDIO: L NONE R 1 kHz 60% modulation ELECTRIC FIELD: 60–80 dBs/75 Ω Term
Measurement point	Audio output terminal
Measurement equipment	Audio level meter
Adjusting Element	RV001 (GK-12 Board)
Specified value	minimum

2-6. PARTS ARRANGEMENT DIAGRAM FOR ADJUSTMENTS

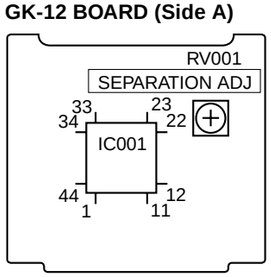
MA-377 BOARD (Side A)



PSM17-501 BOARD (Side B)



GK-12 BOARD (Side A)



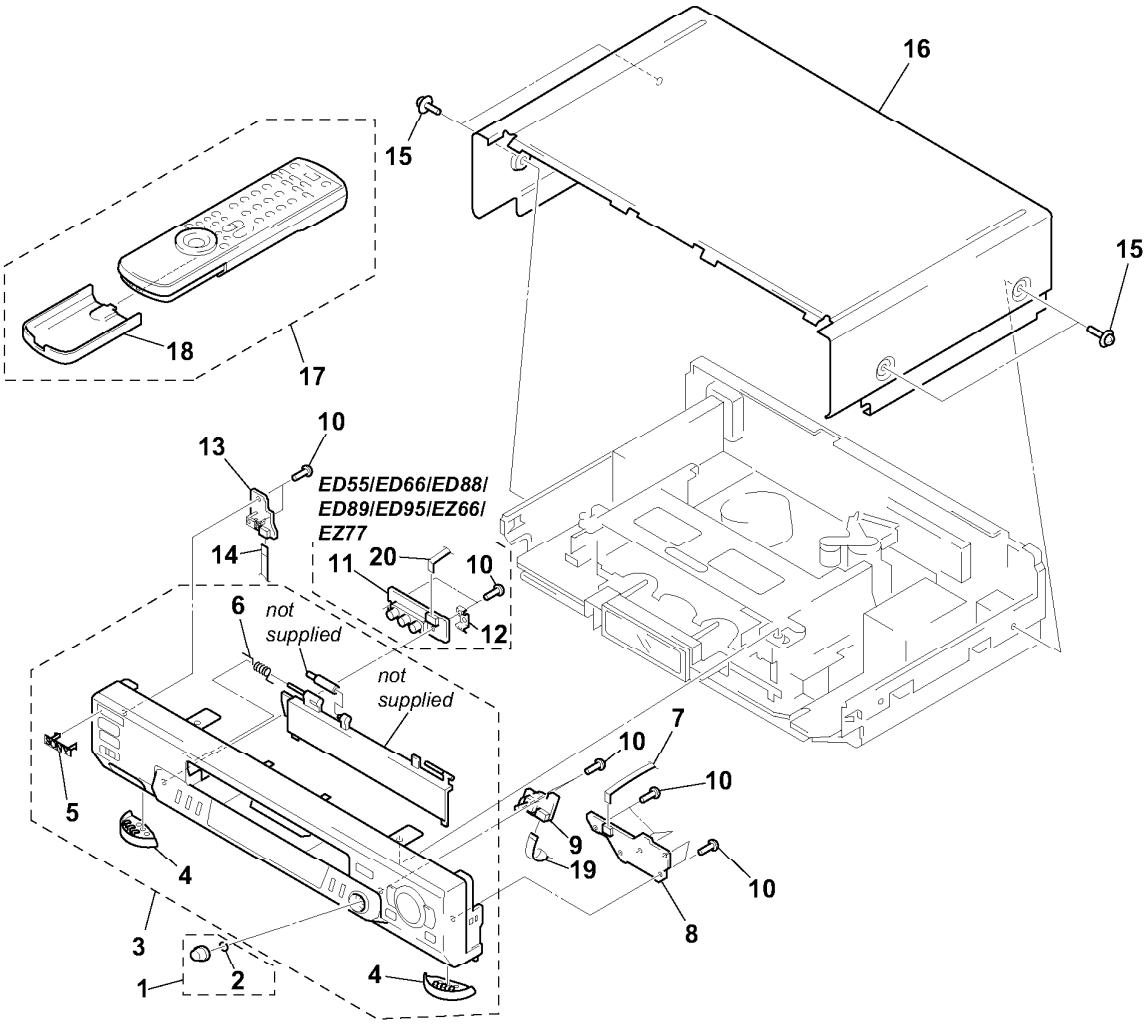
SECTION 8
REPAIR PARTS LIST

8-1. EXPLODED VIEWS

NOTE:
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list and accessories and packing materials are given in the last of the electrical parts list.

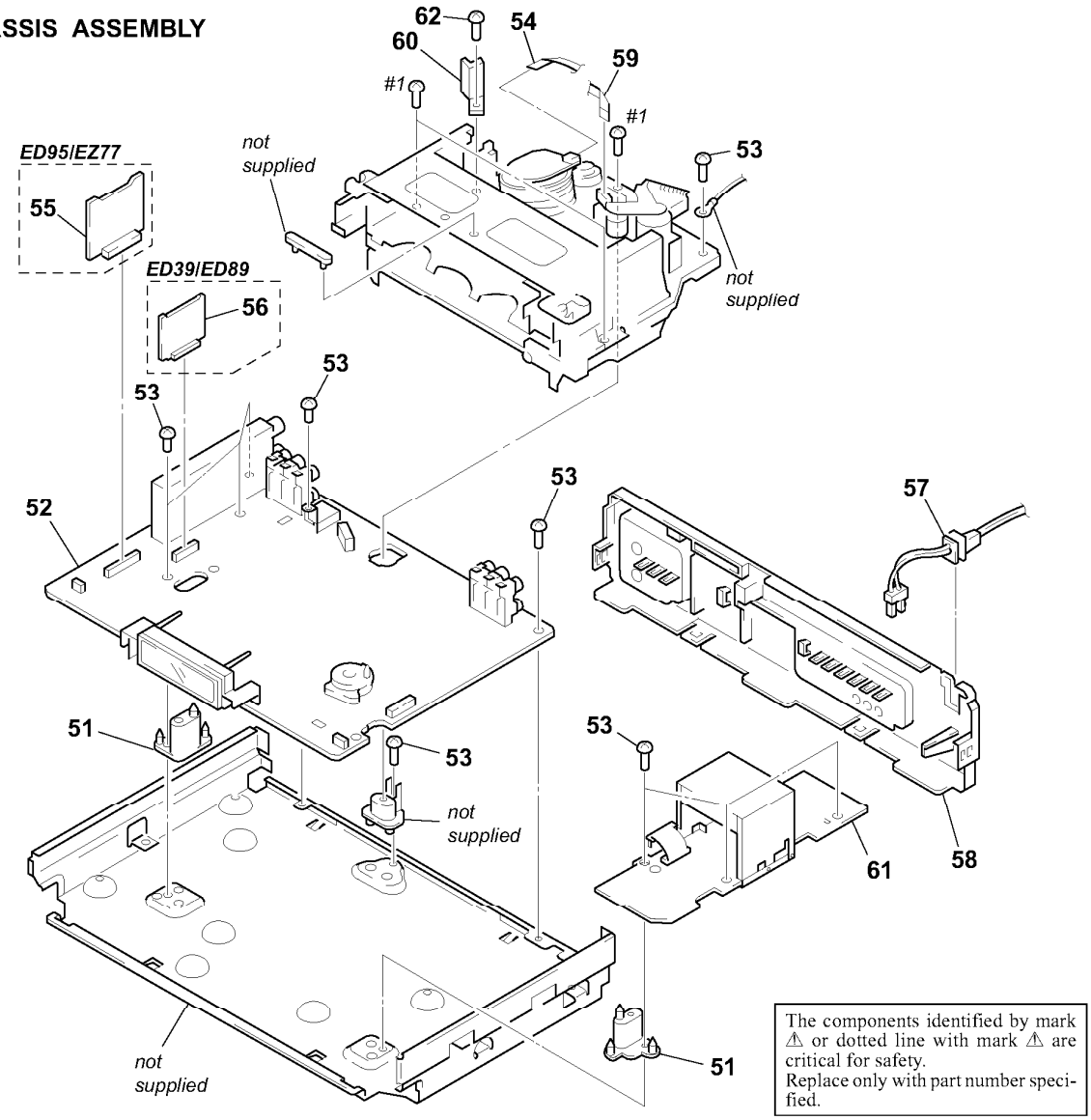
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety
Replace only with part number specified.

8-1-1. FRONT PANEL AND CABINET ASSEMBLIES



Ref. No.	Part No.	Description	Remark
1	X-3950-316-1	KNOB ASSY, ETR (EXCEPT ED33MJ/ED66MJ/ED88MJ)	
1	X-3950-452-1	KNOB ASSY, ETR (ED33MJ/ED66MJ/ED88MJ)	
2	3-055-077-01	SPRING, ETR (P5)	
3	X-3950-295-1	PANEL ASSY, FRONT (ED39)	
3	X-3950-296-1	PANEL ASSY, FRONT (ED89)	
3	X-3950-297-1	PANEL ASSY, FRONT (ED95MI)	
3	X-3950-298-1	PANEL ASSY, FRONT (ED95: MN, TH)	
3	X-3950-299-1	PANEL ASSY, FRONT (ED85)	
3	X-3950-300-1	PANEL ASSY, FRONT (ED55)	
3	X-3950-301-1	PANEL ASSY, FRONT (ED25)	
3	X-3950-302-1	PANEL ASSY, FRONT (ED15)	
3	X-3950-303-1	PANEL ASSY, FRONT (ED88: ME, SG)	
3	X-3950-304-1	PANEL ASSY, FRONT (ED66: ME, SG)	
3	X-3950-305-1	PANEL ASSY, FRONT (ED33: ME, SG)	
3	X-3950-306-1	PANEL ASSY, FRONT (EZ77AS)	
3	X-3950-307-1	PANEL ASSY, FRONT (EZ77NZ)	
3	X-3950-308-1	PANEL ASSY, FRONT (EZ66)	
3	X-3950-309-1	PANEL ASSY, FRONT (EZ44)	
3	X-3950-310-1	PANEL ASSY, FRONT (EZ22)	
3	X-3950-311-1	PANEL ASSY, FRONT (EZ11)	
3	X-3950-438-1	PANEL ASSY, FRONT (ED88MJ)	
3	X-3950-439-1	PANEL ASSY, FRONT (ED66MJ)	
3	X-3950-440-1	PANEL ASSY, FRONT (ED33MJ)	
4	3-057-164-01	INSULATOR (ED15/ED33/ED39/ED66/ED89/EZ11/EZ22/EZ44)	
4	3-057-164-11	INSULATOR (ED25/ED55/ED85/ED88/ED95/EZ66/EZ77)	
5	3 943 995 01	EMBLEM (NO.5), SONY (ED15/ED33/ED39/ED66/ED89/EZ11/EZ22/EZ44)	
5	3-943-995-31	EMBLEM (NO.5), SONY (ED25/ED55/ED85/ED88/ED95/EZ66/EZ77)	
6	3-953-432-01	SPRING (GE), FL	
7	1-792-428-11	CABLE, FLAT (FDS-6)	
* 8	A-6713-652-A	DS-92 BOARD, COMPLETE (ED33MJ/ED66MJ/ED88MJ)	
* 8	A-6713-661-A	DS-92 BOARD, COMPLETE (EXCEPT ED33MJ/ED66MJ/ED88MJ)	
* 9	A-6713-653-A	KK-24 BOARD, COMPLETE (ED33MJ/ED66MJ/ED88MJ)	
* 9	A-6713-660-A	KK-24 BOARD, COMPLETE (EXCEPT ED33MJ/ED66MJ/ED88MJ)	
10	4-921-277-41	SCREW (B2.6X8), TAPPING, BIND	
* 11	A-6713-655-A	FJ-26 BOARD, COMPLETE (ED88MJ)	
* 11	A-6713-663-A	FJ-26 BOARD, COMPLETE (ED88: ME, SG/ED89/ED95)	
* 11	A-6713-667-A	FJ-26 BOARD, COMPLETE (EZ66/EZ77)	
* 11	A-6713-671-A	FJ-26 BOARD, COMPLETE (ED55/ED66: ME, SG)	
* 11	A-6713-677-A	FJ-26 BOARD, COMPLETE (ED66MJ)	
12	3-057-165-01	PLATE, EARTH (ED55/ED66: ME, SG/ED88: ME, SG/ED89/ED95/EZ66/EZ77)	
12	3-057-165-11	PLATE, EARTH (ED66MJ/ED88MJ)	
* 13	A-6713-654-A	MF-321 BOARD, COMPLETE (ED33MJ/ED66MJ/ED88MJ)	
* 13	A-6713-662-A	MF-321 BOARD, COMPLETE (EXCEPT ED33MJ/ED66MJ/ED88MJ)	
14	1-792-427-11	CABLE, FLAT (FMF-39)	
15	3-710-901-11	SCREW, TAPPING (ED15/ED33/ED39/ED66/ED89/EZ11/EZ22/EZ44)	
15	3-710-901-61	SCREW, TAPPING (ED25/ED55/ED85/ED88/ED95/EZ66/EZ77)	
16	3-057-168-41	CASE, UPPER (ED25/ED55/ED85/ED88/ED95/EZ66/EZ77)	
16	3-057-168-71	CASE, UPPER (ED15/ED33/ED39/ED66/ED89/EZ11/EZ22/EZ44)	
17	1-418-869-11	COMMANDER, STANDARD (RMT-V296) (EZ22/EZ44)	
17	1-418-869-21	COMMANDER, STANDARD (RMT-V296A) (EZ66)	
17	1-418-869-31	COMMANDER, STANDARD (RMT-V296B) (EZ77)	
17	1-418-871-11	COMMANDER, STANDARD (RMT-V298) (EZ11)	
17	1-418-871-21	COMMANDER, STANDARD (RMT-V298A) (ED15/ED25/ED33/ED39/ED55/ED85)	
17	1-418-871-31	COMMANDER, STANDARD (RMT-V298B) (ED66/ED88/ED95: MN, TH)	
17	1-418-871-41	COMMANDER, STANDARD (RMT-V298C) (ED89)	
17	1-418-871-51	COMMANDER, STANDARD (RMT-V298D) (ED95MI)	
18	3-709-128-01	COVER, BATTERY (for RMT-V296/V296A/V296B) (EZ22/EZ44/EZ66/EZ77)	
18	3-709-129-01	COVER, BATTERY (for RMT-V298/V298A/V298B/V298C/V298D) (EXCEPT EZ22/EZ44/EZ66/EZ77)	
19	1-792-426-11	CABLE, FLAT (FKK-3)	
20	1-792-430-11	CABLE, FLAT (FFJ-3) (ED55/ED66/ED88/ED89/ED95/EZ66/EZ77)	

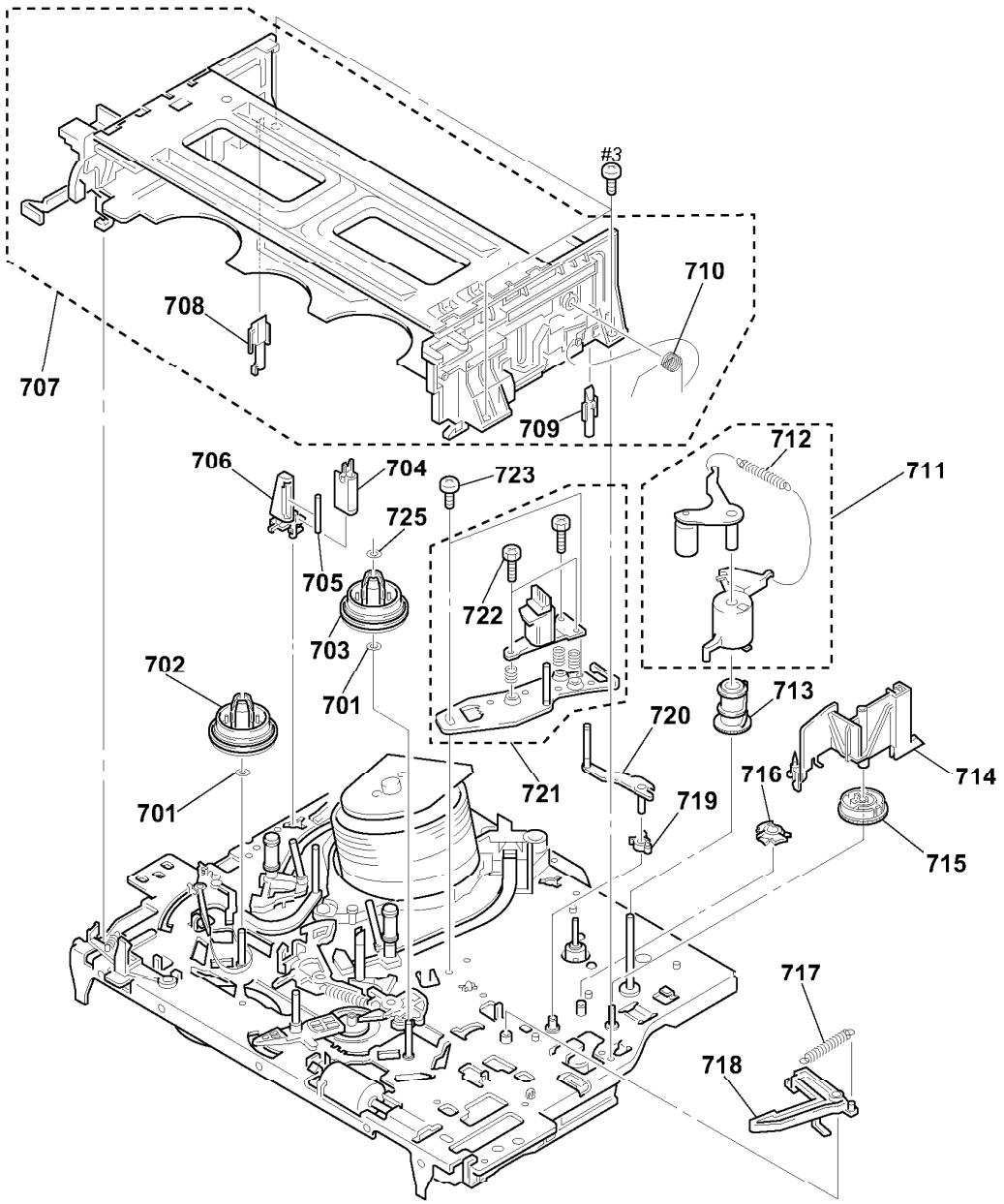
8-1-2. CHASSIS ASSEMBLY



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
51	3-979-314-01	BASE(R), MD	
* 52	A-6713-649-A	MA-377 BOARD, COMPLETE (ED88: ME, SG)	
* 52	A-6713-650-A	MA-377 BOARD, COMPLETE (EZ66)	
* 52	A-6713-651-A	MA-377 BOARD, COMPLETE (EZ77NZ)	
* 52	A-6713-656-A	MA-377 BOARD, COMPLETE (ED88MJ)	
* 52	A-6713-658-A	MA-377 BOARD, COMPLETE (ED95: MN, TH)	
* 52	A-6713-664-A	MA-377 BOARD, COMPLETE (ED95MI)	
* 52	A-6713-665-A	MA-377 BOARD, COMPLETE (ED85)	
* 52	A-6713-666-A	MA-377 BOARD, COMPLETE (EZ77AS)	
* 52	A-6713-668-A	MA-377 BOARD, COMPLETE (ED89)	
* 52	A-6713-670-A	MA-377 BOARD, COMPLETE (ED55)	
* 52	A-6713-672-A	MA-377 BOARD, COMPLETE (EZ44)	
* 52	A-6713-673-A	MA-377 BOARD, COMPLETE (EZ11)	
* 52	A-6713-674-A	MA-377 BOARD, COMPLETE (ED33MJ)	
* 52	A-6713-675-A	MA-377 BOARD, COMPLETE (ED39)	
* 52	A-6713-676-A	MA-377 BOARD, COMPLETE (ED33: ME, SG)	
* 52	A-6713-678-A	MA-377 BOARD, COMPLETE (ED66MJ)	
* 52	A-6713-679-A	MA-377 BOARD, COMPLETE (ED66: ME, SG)	
* 52	A-6713-680-A	MA-377 BOARD, COMPLETE (EZ22)	
* 52	A-6713-681-A	MA-377 BOARD, COMPLETE (ED15/ED25)	
53	3-970-608-21	SUMITITE (B3), +BV	
54	1-792-429-11	CABLE, FLAT (FMD-15)	
54	1-792-431-11	CABLE, FLAT (FMD-16) (ED55/ED66/ED85/ED88/ED89/ED95/EZ44/EZ66/EZ77)	
* 55	A-6791-591-A	NK-11 BOARD, COMPLETE (ED95/EZ77NZ)	
* 55	A-6791-880-A	GK-12 BOARD, COMPLETE (EZ77AS)	
* 56	A-6713-669-A	SE-103 BOARD, COMPLETE (ED39/ED89)	
⚠57	1-777-850-51	CORD, POWER (EXCEPT EZ11/EZ22/EZ44/EZ66/EZ77)	
⚠57	1-777-855-42	CORD, POWER (EZ11/EZ22/EZ44/EZ66/EZ77)	
58	X-3950-323-1	PANEL ASSY, REAR (ED33MJ)	
58	X-3950-324-1	PANEL ASSY, REAR (ED66MJ)	
58	X-3950-325-1	PANEL ASSY, REAR (ED88MJ)	
58	X-3950-332-1	PANEL ASSY, REAR (ED15/ED25/ED33: ME, SG/ED39/EZ11/EZ22)	
58	X-3950-333-1	PANEL ASSY, REAR (ED55/ED66: ME, SG/EZ44)	
58	X-3950-334-1	PANEL ASSY, REAR (ED85/ED95MI/EZ66)	
58	X-3950-335-1	PANEL ASSY, REAR (ED88: ME, SG/ED89/ED95: MN, TH/EZ77)	
59	1-792-425-11	CABLE, FLAT (FAC-7)	
60	X-3947-568-1	TC (N17S) ASSY	
* 61	1-468-495-11	POWERT BLOCK (PSM17-501)	
62	3-979-112-01	SCREW SW (+) BVTP 3X10	

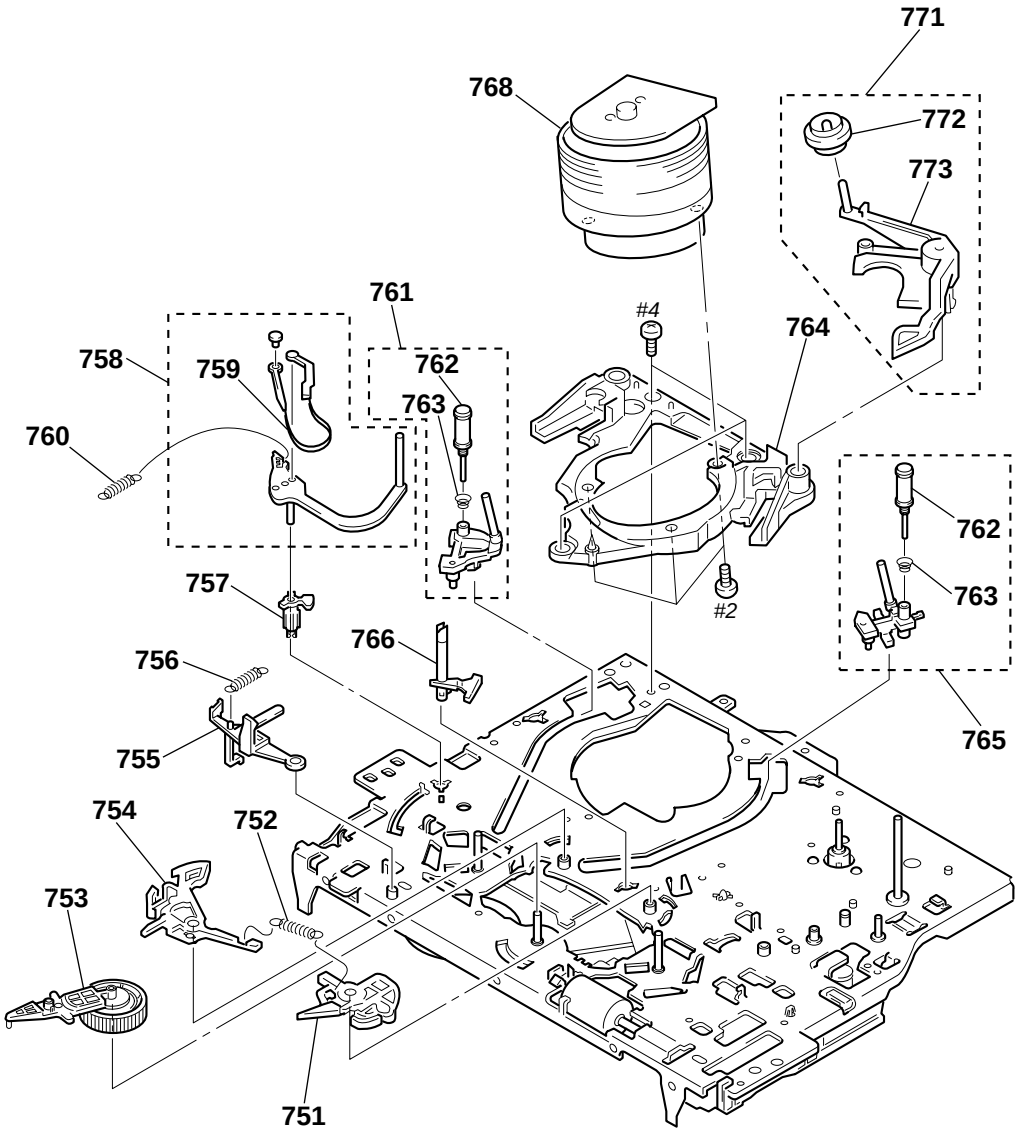
8-1-3. MECHANISM CHASSIS ASSEMBLY (1)



Ref. No.	Part No.	Description	Remark
701	3-977-509-01	WASHER, THRUST	
702	3-977-507-01	TABLE, REEL (S)	
703	3-977-508-01	TABLE, REEL (T)	
704	1-500-144-11	HEAD, FE	
705	3-977-495-01	SHAFT TG2	
706	3-977-494-01	HOLDER, FEH	
707	A-6759-619-B	FL COMPLETE ASSY	
708	3-977-535-01	PLATE, LUMINOUS (END SENSOR)	
709	3-977-536-01	PLATE, LUMINOUS (TOP SENSOR)	
710	3-970-471-01	SPRING (DECK OPEN), TORSION	
711	A-6759-615-A	PRESS BLOCK ASSY, PINCH	

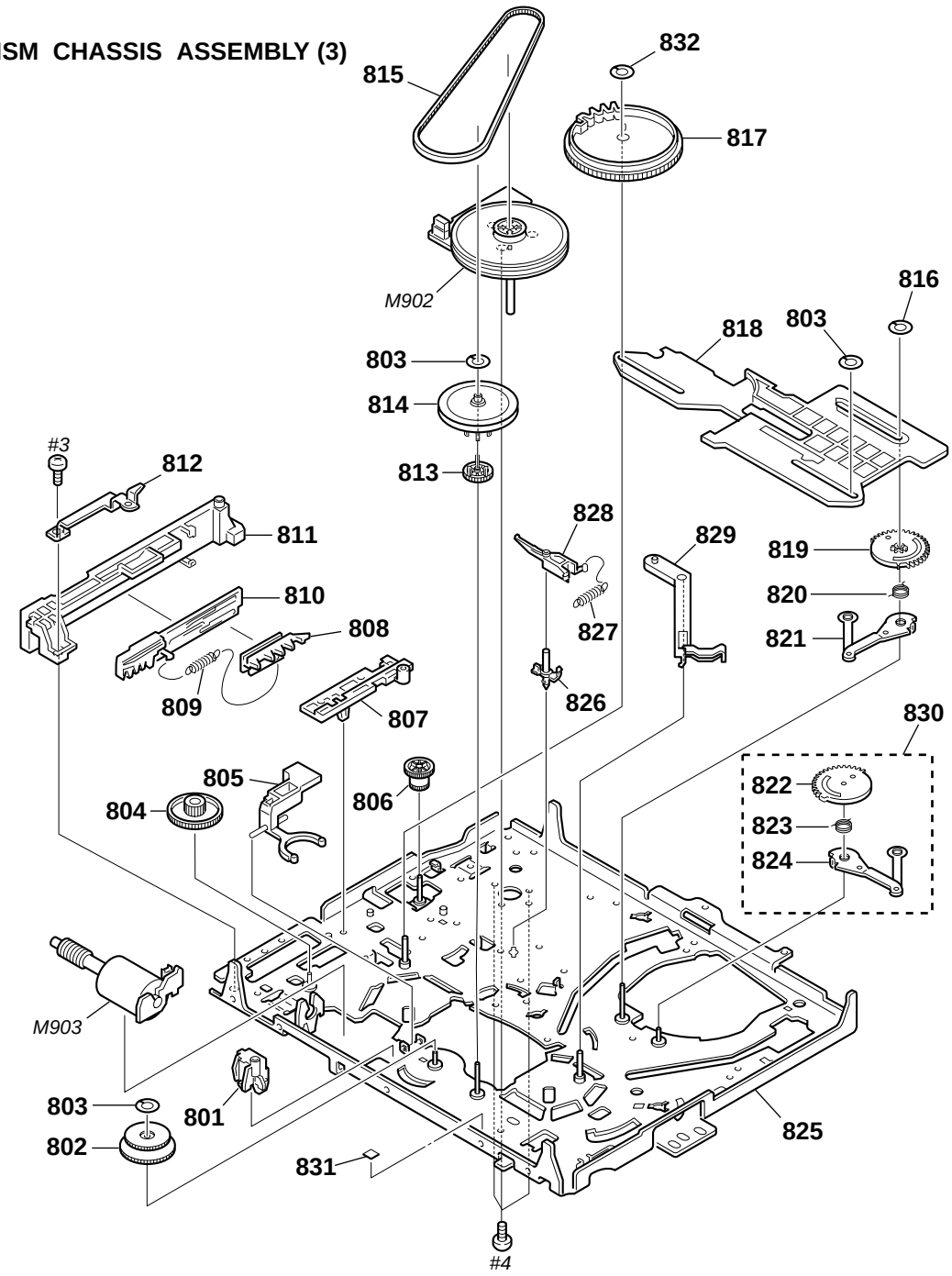
Ref. No.	Part No.	Description	Remark
713	3-977-447-01	GEAR, ELEVATOR	
714	3-977-514-01	OPENER, LID	
715	3-977-441-01	GEAR, PINCH PRESSING	
716	3-977-445-02	GEAR, TG8 ARM DRIVING	
717	3-977-465-01	SPRING, EXTENSION (RVS BRAKE)	
718	X-3947-582-1	ARM ASSY, RVS BRAKE	
720	3-977-446-01	GEAR, TG8 ARM	
721	A-6775-791-A	HEAD BLOCK ASSY, ACE FFC	
722	3-974-556-11	+HEXA TT 2.6X9 (TAPER)	
723	3-979-508-01	SCREW +HEXA TP SW 3X8	
725	3-977-443-01	WASHER, STOPPER	

8-1-4. MECHANISM CHASSIS ASSEMBLY (2)



Ref. No.	Part No.	Description	Remark
751	X-3947-581-1	BRAKE (T) ASSY, MAIN	
752	3-977-462-01	SPRING, EXTENTION. (MAIN BRAKE)	
753	X-3947-573-1	ARM ASSY, PENDULUM	
754	X-3947-580-2	BRAKE (S) ASSY, MAIN	
755	3-977-513-02	LEVER, REC. PROOF	
756	3-976-767-01	SPRING, TENS. (REC. PROOF)	
757	3-977-487-01	BOSS, TG1 FULCRUM	
758	X-3947-587-1	TG1 ASSY (ED66SG/ED85TH/ED88MJ/ED89/ED95: MI, MN/EZ22/EZ77AS)	
758	X-3950-427-1	TG1 ASSY (SD) (EXCEPT ED66SG/ED85TH/ED88MJ/ED89/ED95: MI, MN/EZ22/EZ77AS)	
759	X-3947-589-1	BAND ASSY, TG1 (ED66SG/ED85TH/ED88MJ/ED89/ED95: MI, MN/EZ22/EZ77AS)	
759	X-3950-373-1	BAND ASSY, TG1 (SD) (EXCEPT ED66SG/ED85TH/ED88MJ/ED89/ED95: MI, MN/EZ22/EZ77AS)	
760	3-977-488-01	SPRING (POWER TENSION)	
761	A-6750-324-A	SHUTTLE (S) BLOCK ASSY	
762	X-3944-378-1	ROLLER ASSY, GUIDE	
763	3-965-178-01	SPRING	
764	3-969-632-04	BASE, DRUM	
765	A-6750-328-E	SHUTTLE (T) BLOCK ASSY	
766	3-977-501-01	PLATE, LUMINOUS	
768	1-772-360-11	DRUM ASSY, DZH-89D-R (ED15/ED25/ED33/ED39/EZ11/EZ22)	
768	8-839-048-51	DRUM ASSY, DZH-0A1A/Z-RP (ED85/ED88/ED89/ED95/EZ66/EZ77)	
768	8-839-050-51	DRUM ASSY, DZH-0A3A/Z-RP (ED55/ED66/EZ44)	
771	A-6746-074-G	ROLLER BLOCK ASSY, HC	
772	X-3947-255-1	ROLLER ASSY, HC	
773	3-975-724-07	ARM, HC	

8-1-5. MECHANISM CHASSIS ASSEMBLY (3)



Ref. No.	Part No.	Description	Remark
801	3-977-437-01	RETAINER, CAM MOTOR	
802	X-3947-584-1	ASSY, REEL DIRECT	
803	3-977-443-01	WASHER, STOPPER	
804	3-977-438-01	WORM - WHEEL	
805	3-977-506-01	ARM, LIMITTER SELECTION	
806	3-977-444-01	GEAR, PINCH TRANSMISSION	
807	3-977-515-01	GUIDE, FL SLIDER	
808	3-977-517-01	PLATE, SLIDE, FL	
809	3-977-519-01	SPRING, TENS. (LIMIT, FL)	
810	3-977-518-02	PLATE, LIMITTER, FL	
811	3-977-516-01	HOLDER, FL SLIDER	
812	3-977-877-01	PLATE, RETAINER	
813	3-977-504-01	GEAR, CLUTCH	
814	X-3947-585-1	GEAR ASSY, PULLEY	
815	3-977-510-01	BELT, RUBBER	
816	3-056-824-01	WASHER, STOPPER	
817	3-977-439-01	GEAR, CAM	

Ref. No.	Part No.	Description	Remark
818	3-977-442-01	SLIDER	
819	3-977-455-01	GEAR, LOADING (T)	
820	3-977-456-03	SPRING, TORSION (LOAD T)	
821	X-3947-579-1	LEVER ASSY, LOADING (T)	
822	3-977-451-01	GEAR, LOADING (S)	
823	3-977-452-01	SPRING, TORSION (LOAD S)	
824	X-3947-578-1	LEVER ASSY, LOADING (S)	
825	X-3947-576-2	CHASSIS ASSY, MECHANICAL	
826	3-977-468-01	SHAFT, CAPSTAN BRAKE	
827	3-977-467-02	SPRING, CAP BRAKE	
828	X-3947-583-1	BRAKE ASSY, CAPSTAN	
829	3-977-489-01	ARM, TG1 DRIVING	
830	A-6759-616-A	GEAR BLOCK ASSY, LOADING (S)	
831	3-989-917-01	SPACER (REC PROOF)	
832	3-056-952-11	WASHER, STOPPER	
M902	1-698-971-11	MOTOR, DC (CAPSTAN)	
M903	X-3947-577-1	MOTOR ASSY, CAM	

8-2. ELECTRICAL PARTS LIST

NOTE:
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL: Metal-film resistor.
  METAL OXIDE: Metal oxide-film resistor.
  F: nonflammable
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u: µ, for example:
  uA. . : µA. . uPA. . : µPA. .
  uPB. . : µPB. . uPC. . : µPC. .
  uPD. . : µPD. .
- CAPACITORS
  uF: µF
- COILS
  uH: µH
- Not all of the parts for POWER BLOCK (PSM17-501) are listed.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description			Remark
*	A-6713-652-A	DS-92 BOARD, COMPLETE (ED33MJ/ED66MJ/ED88MJ)			
*	A-6713-661-A	DS-92 BOARD, COMPLETE (EXCEPT ED33MJ/ED66MJ/ED88MJ)			
		********** (Ref. No. 1,000 Series)			
		< CONNECTOR >			
CN521	1-784-447-11	CONNECTOR, FFC/FPC 5P			
		< RESISTOR >			
R521	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R522	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R523	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R524	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R525	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
		< SWITCH >			
S521	1-762-196-21	SWITCH, TACT (REW ◀◀)			
S522	1-762-196-21	SWITCH, TACT (PAUSE ▮▮)			
S523	1-762-196-21	SWITCH, TACT (FF ▶▶)			
S524	1-762-196-21	SWITCH, TACT (PLAY ▷)			
S525	1-762-196-21	SWITCH, TACT (STOP ■)			
S526	1-762-196-21	SWITCH, TACT (EJECT ⏏)			
S527	1-762-196-21	SWITCH, TACT (REC ●)			
*	A-6713-655-A	FJ-26 BOARD, COMPLETE (ED88MJ)			
*	A-6713-663-A	FJ-26 BOARD, COMPLETE (ED88: ME, SG/ED89/ED95)			
*	A-6713-667-A	FJ-26 BOARD, COMPLETE (EZ66/EZ77)			
*	A-6713-671-A	FJ-26 BOARD, COMPLETE (ED55/ED66: ME, SG)			
*	A-6713-677-A	FJ-26 BOARD, COMPLETE (ED66MJ)			
		********** (Ref. No. 1,000 Series)			
		< CONNECTOR >			
CN531	1-784-449-11	CONNECTOR, FFC/FPC 7P			
		< JACK >			
CNJ531	1-770-021-11	JACK, PIN 3P (LINE-2 IN) (ED88/ED89/ED95/EZ66/EZ77)			
CNJ531	1-794-162-11	JACK, PIN 3P (LINE-2 IN) (ED55/ED66)			

Ref. No.	Part No.	Description			Remark
		< DIODE >			
D531	8-719-071-15	DIODE HZM6.8ZWA1TL			
D532	8-719-071-15	DIODE HZM6.8ZWA1TL			
D533	8-719-071-15	DIODE HZM6.8ZWA1TL			
D534	8-719-017-09	DIODE 02DZ6.2-TPH3			
		< FILTER >			
FL531	1-236-163-11	ENCAPSULATED COMPONENT (EZ66/EZ77)			
FL532	1-236-163-11	ENCAPSULATED COMPONENT (EZ66/EZ77)			
		< JUMPER RESISTOR >			
JR541	1-216-296-00	METAL CHIP	0	5%	1/8W
JS531	1-216-296-00	METAL CHIP	0	5%	1/8W (ED55/ED66/ED88/ED89/ED95)
JS532	1-216-296-00	METAL CHIP	0	5%	1/8W (ED55/ED66/ED88/ED89/ED95)
JS533	1-216-295-00	METAL CHIP	0	5%	1/10W (ED55/ED66)
JS534	1-216-295-00	METAL CHIP	0	5%	1/10W (ED88/ED89/ED95/EZ66/EZ77)
		< RESISTOR >			
R531	1-216-295-00	METAL CHIP	0	5%	1/10W (EZ66/EZ77)
R532	1-216-295-00	METAL CHIP	0	5%	1/10W (EZ66/EZ77)
R533	1-216-021-00	METAL CHIP	68	5%	1/10W
R534	1-216-097-91	RES, CHIP	100K	5%	1/10W (ED88/ED89/ED95/EZ66/EZ77)
R535	1-216-097-91	RES, CHIP	100K	5%	1/10W (ED88/ED89/ED95/EZ66/EZ77)
*	A-6791-880-A	GK-12 BOARD, COMPLETE (EZ77AS)			
		********** (Ref. No. 2,000 Series)			
		< CAPACITOR >			
C003	1-107-823-11	CERAMIC CHIP	0.47uF	10.00%	16V
C006	1-163-137-00	CERAMIC CHIP	680PF	5%	50V
C007	1-164-699-11	CERAMIC CHIP	0.0033uF	5.00%	50V
C008	1-164-699-11	CERAMIC CHIP	0.0033uF	5.00%	50V
C009	1-163-137-00	CERAMIC CHIP	680PF	5%	50V
C010	1-163-243-11	CERAMIC CHIP	47PF	5.00%	50V
C011	1-107-823-11	CERAMIC CHIP	0.47uF	10.00%	16V

Ref. No.	Part No.	Description			Remark
C012	1-107-823-11	CERAMIC CHIP	0.47uF	10.00%	16V
C013	1-107-823-11	CERAMIC CHIP	0.47uF	10.00%	16V
C014	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C015	1-107-823-11	CERAMIC CHIP	0.47uF	10.00%	16V
C016	1-107-823-11	CERAMIC CHIP	0.47uF	10.00%	16V
C017	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C018	1-107-823-11	CERAMIC CHIP	0.47uF	10.00%	16V
C022	1-163-021-91	CERAMIC CHIP	0.01uF	10.00%	50V
C023	1-163-021-91	CERAMIC CHIP	0.01uF	10.00%	50V
		< CONNECTOR >			
* CN001	1-691-183-11	CONNECTOR (BOARD TO BOARD) 13P			
		< IC >			
IC001	8-759-579-30	IC TDA9873H/V1, 518			
		< JUMPER RESISTOR >			
JS002	1-216-295-00	METAL CHIP	0	5%	1/10W
JS003	1-216-295-00	METAL CHIP	0	5%	1/10W
		< RESISTOR >			
R001	1-216-295-00	METAL CHIP	0	5%	1/10W
R002	1-216-295-00	METAL CHIP	0	5%	1/10W
R004	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R005	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R006	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R007	1-216-045-00	METAL CHIP	680	5%	1/10W
R008	1-216-041-00	METAL CHIP	470	5%	1/10W
R009	1-216-041-00	METAL CHIP	470	5%	1/10W
R010	1-208-803-11	METAL CHIP	7.5K	0.5%	1/10W
R011	1-216-295-00	METAL CHIP	0	5%	1/10W
R012	1-216-298-00	METAL CHIP	2.2	5%	1/10W
		< VARIABLE RESISTOR >			
RV001	1-241-783-11	RES, ADJ, CARBON 2.2K			
		< VIBRATOR >			
X001	1-781-353-11	VIBRATOR, CRYSTAL (4MHz)			
*	A-6713-653-A	KK-24 BOARD, COMPLETE (ED33MJ/ED66MJ/ED88MJ)			
*	A-6713-660-A	KK-24 BOARD, COMPLETE (EXCEPT ED33MJ/ED66MJ/ED88MJ)			
		********** (Ref. No. 1,000 Series)			
		< CONNECTOR >			
CN511	1-784-449-11	CONNECTOR, FFC/FPC 7P			
		< DIODE >			
D511	8-719-056-06	DIODE SLR-342DCT31 (SEARCH)			
		< RESISTOR >			
R511	1-216-037-00	METAL CHIP	330	5%	1/10W (ED33MJ/ED66MJ/ED88MJ)
R511	1-216-043-91	RES, CHIP	560	5%	1/10W (EXCEPT ED33MJ/ED66MJ/ED88MJ)

Ref. No.	Part No.	Description			Remark
		< SWITCH >			
S511	1-418-059-22	ENCODER, ROTARY (EASY TIMER)			
S512	1-762-196-21	SWITCH, TACT (SEARCH)			
*	A-6713-649-A	MA-377 BOARD, COMPLETE (ED88: ME, SG)			
*	A-6713-650-A	MA-377 BOARD, COMPLETE (EZ66)			
*	A-6713-651-A	MA-377 BOARD, COMPLETE (EZ77NZ)			
*	A-6713-656-A	MA-377 BOARD, COMPLETE (ED88MJ)			
*	A-6713-658-A	MA-377 BOARD, COMPLETE (ED95: MN, TH)			
*	A-6713-664-A	MA-377 BOARD, COMPLETE (ED95MI)			
*	A-6713-665-A	MA-377 BOARD, COMPLETE (ED85)			
*	A-6713-666-A	MA-377 BOARD, COMPLETE (EZ77AS)			
*	A-6713-668-A	MA-377 BOARD, COMPLETE (ED89)			
*	A-6713-670-A	MA-377 BOARD, COMPLETE (ED55)			
*	A-6713-672-A	MA-377 BOARD, COMPLETE (EZ44)			
*	A-6713-673-A	MA-377 BOARD, COMPLETE (EZ11)			
*	A-6713-674-A	MA-377 BOARD, COMPLETE (ED33MJ)			
*	A-6713-675-A	MA-377 BOARD, COMPLETE (ED39)			
*	A-6713-676-A	MA-377 BOARD, COMPLETE (ED33: ME, SG)			
*	A-6713-678-A	MA-377 BOARD, COMPLETE (ED66MJ)			
*	A-6713-679-A	MA-377 BOARD, COMPLETE (ED66: ME, SG)			
*	A-6713-680-A	MA-377 BOARD, COMPLETE (EZ22)			
*	A-6713-681-A	MA-377 BOARD, COMPLETE (ED15/ED25)			
		********** (Ref. No. 1,000 Series)			
	3-057-386-01	HOLDER, FLO			
*	3-960-273-01	SPACER, TOP END			
*	3-960-274-01	SPACER, LED			
*	3-966-865-01	BASE, INDICATION TUBE			
		< CAPACITOR >			
C001	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C002	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C003	1-163-251-11	CERAMIC CHIP	100PF	5.00%	50V
C004	1-163-251-11	CERAMIC CHIP	100PF	5.00%	50V
C005	1-128-057-11	ELECT	330uF	20.00%	6.3V
C031	1-128-499-11	ELECT	220uF	20.00%	16V
C032	1-163-021-91	CERAMIC CHIP	0.01uF	10.00%	50V (ED33MJ/ED66MJ/ED88MJ)
C032	1-164-232-11	CERAMIC CHIP	0.01uF		50V (EXCEPT ED33MJ/ED66MJ/ED88MJ)
C034	1-163-021-91	CERAMIC CHIP	0.01uF	10.00%	50V (ED33MJ/ED66MJ/ED88MJ)
C034	1-164-232-11	CERAMIC CHIP	0.01uF		50V (EXCEPT ED33MJ/ED66MJ/ED88MJ)
C051	1-124-589-11	ELECT	47uF	20%	16V
C052	1-124-589-11	ELECT	47uF	20%	16V
C053	1-164-344-11	CERAMIC CHIP	0.068uF	10.00%	25V
C054	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C071	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C072	1-164-489-11	CERAMIC CHIP	0.22uF	10.00%	16V
C073	1-163-021-91	CERAMIC CHIP	0.01uF	10.00%	50V (ED33MJ/ED66MJ/ED88MJ)
C073	1-164-232-11	CERAMIC CHIP	0.01uF		50V (EXCEPT ED33MJ/ED66MJ/ED88MJ)
C074	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C075	1-163-259-91	CERAMIC CHIP	220PF	5.00%	50V
C076	1-124-589-11	ELECT	47uF	20%	16V (ED15/ED25/ED33/ED39/EZ11/EZ22)
C076	1-126-767-11	ELECT	1000uF	20.00%	16V (EXCEPT ED15/ED25/ED33/ED39/EZ11/EZ22)

Ref. No.	Part No.	Description			Remark
C077	1-124-589-11	ELECT	47uF	20%	16V
					(ED15/ED25/ED33/ED39/EZ11/EZ22)
C101	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C102	1-127-890-11	DOUBLE LAYER	0.47F		5.5V
					(ED33/ED39/ED66/ED88/ED89)
C103	1-104-905-11	DOUBLE LAYER	0.22F		5.5V
					(EXCEPT ED33/ED39/ED66/ED88/ED89)
C104	1-126-925-11	ELECT	470uF	20.00%	10V
C105	1-164-159-11	CERAMIC	0.1uF		50V
					(ED33MJ/ED66MJ/ED88MJ)
C105	1-164-159-21	CERAMIC	0.1uF		50V
					(EXCEPT ED33MJ/ED66MJ/ED88MJ)
C106	1-163-021-91	CERAMIC CHIP	0.01uF	10.00%	50V
					(ED33MJ/ED66MJ/ED88MJ)
C106	1-164-232-11	CERAMIC CHIP	0.01uF		50V
					(EXCEPT ED33MJ/ED66MJ/ED88MJ)
C107	1-164-182-11	CERAMIC CHIP	0.0033uF	10%	50V
C108	1-163-231-11	CERAMIC CHIP	15PF	5.00%	50V
C109	1-163-231-11	CERAMIC CHIP	15PF	5.00%	50V
C110	1-163-234-11	CERAMIC CHIP	20PF	5.00%	50V
C111	1-163-234-11	CERAMIC CHIP	20PF	5.00%	50V
C112	1-164-489-11	CERAMIC CHIP	0.22uF	10.00%	16V
C113	1-163-038-00	CERAMIC CHIP	0.1uF		25V
					(ED85/ED88/ED89/ED95/EZ66/EZ77)
C141	1-163-021-91	CERAMIC CHIP	0.01uF	10.00%	50V
					(ED33MJ/ED66MJ/ED88MJ)
C141	1-164-232-11	CERAMIC CHIP	0.01uF		50V
					(EXCEPT ED33MJ/ED66MJ/ED88MJ)
C142	1-163-021-91	CERAMIC CHIP	0.01uF	10.00%	50V
					(ED33MJ/ED66MJ/ED88MJ)
C142	1-164-232-11	CERAMIC CHIP	0.01uF		50V
					(EXCEPT ED33MJ/ED66MJ/ED88MJ)
C143	1-164-159-11	CERAMIC	0.1uF		50V
					(ED33MJ/ED66MJ/ED88MJ)
C143	1-164-159-21	CERAMIC	0.1uF		50V
					(EXCEPT ED33MJ/ED66MJ/ED88MJ)
C151	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C152	1-126-163-11	ELECT	4.7uF	20%	50V
C153	1-126-157-11	ELECT	10uF	20%	16V
C154	1-126-163-11	ELECT	4.7uF	20%	50V
C155	1-163-021-91	CERAMIC CHIP	0.01uF	10.00%	50V
					(ED33MJ/ED66MJ/ED88MJ)
C155	1-164-232-11	CERAMIC CHIP	0.01uF		50V
					(EXCEPT ED33MJ/ED66MJ/ED88MJ)
C156	1-163-251-11	CERAMIC CHIP	100PF	5.00%	50V
C157	1-163-241-11	CERAMIC CHIP	39PF	5%	50V
C158	1-163-241-11	CERAMIC CHIP	39PF	5%	50V
C159	1-163-251-11	CERAMIC CHIP	100PF	5.00%	50V
					(ED95MI)
C161	1-163-227-11	CERAMIC CHIP	10PF	0.50PF	50V
					(ED95MI)
C161	1-163-229-11	CERAMIC CHIP	12PF	5.00%	50V
					(EXCEPT ED95MI)
C162	1-163-224-11	CERAMIC CHIP	7PF	0.25PF	50V
C165	1-163-229-11	CERAMIC CHIP	12PF	5.00%	50V
C166	1-163-231-11	CERAMIC CHIP	15PF	5.00%	50V
					(ED95MI)
C167	1-164-489-11	CERAMIC CHIP	0.22uF	10.00%	16V
C168	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C171	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C172	1-163-245-11	CERAMIC CHIP	56PF	5.00%	50V
C173	1-109-982-11	CERAMIC CHIP	1uF	10.00%	10V
					(EXCEPT EZ11/EZ22/EZ44/EZ66/EZ77)

Ref. No.	Part No.	Description			Remark
C191	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
					(ED66/ED88/ED95: MN, TH/EZ77)
C192	1-163-243-11	CERAMIC CHIP	47PF	5.00%	50V
C193	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C194	1-126-157-11	ELECT	10uF	20%	16V
C195	1-124-234-00	ELECT	22uF	20%	16V
C196	1-163-253-11	CERAMIC CHIP	120PF	5.00%	50V
C197	1-164-182-11	CERAMIC CHIP	0.0033uF	10%	50V
					(ED66/ED88/ED95: MN, TH/EZ77)
C201	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C202	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
					(EXCEPT ED15/ED25/ED33/ED39/EZ11/EZ22)
C202	1-164-232-11	CERAMIC CHIP	0.01uF		50V
					(ED15/ED25/ED33/ED39/EZ11/EZ22)
C203	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
					(EXCEPT ED15/ED25/ED33/ED39/EZ11/EZ22)
C203	1-164-232-11	CERAMIC CHIP	0.01uF		50V
					(ED15/ED25/ED33/ED39/EZ11/EZ22)
C204	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
					(EXCEPT ED15/ED25/ED33/ED39/EZ11/EZ22)
C204	1-164-232-11	CERAMIC CHIP	0.01uF		50V
					(ED15/ED25/ED33/ED39/EZ11/EZ22)
C205	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
					(EXCEPT ED15/ED25/ED33/ED39/EZ11/EZ22)
C205	1-164-232-11	CERAMIC CHIP	0.01uF		50V
					(ED15/ED25/ED33/ED39/EZ11/EZ22)
C206	1-163-989-11	CERAMIC CHIP	0.033uF	10%	25V
C207	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C208	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C209	1-126-162-11	ELECT	3.3uF	20%	50V
C210	1-163-113-00	CERAMIC CHIP	68PF	5%	50V
					(ED15/ED25/ED33/ED39/EZ11/EZ22)
C211	1-163-113-00	CERAMIC CHIP	68PF	5%	50V
					(ED15/ED25/ED33/ED39/EZ11/EZ22)
C212	1-163-021-91	CERAMIC CHIP	0.01uF	10.00%	50V
					(ED33MJ)
C212	1-164-232-11	CERAMIC CHIP	0.01uF		50V
					(ED15/ED25/ED33: ME, SG/ED39/EZ11/EZ22)
C213	1-163-021-91	CERAMIC CHIP	0.01uF	10.00%	50V
					(ED33MJ)
C213	1-164-232-11	CERAMIC CHIP	0.01uF		50V
					(ED15/ED25/ED33: ME, SG/ED39/EZ11/EZ22)
C214	1-163-235-11	CERAMIC CHIP	22PF	5.00%	50V
					(ED15/ED25/ED33/ED39/EZ11/EZ22)
C214	1-163-239-11	CERAMIC CHIP	33PF	5.00%	50V
					(EXCEPT ED15/ED25/ED33/ED39/EZ11/EZ22)
C215	1-163-021-91	CERAMIC CHIP	0.01uF	10.00%	50V
					(ED33MJ/ED66MJ/ED88MJ)
C215	1-164-232-11	CERAMIC CHIP	0.01uF		50V
					(EXCEPT ED33MJ/ED66MJ/ED88MJ)
C216	1-109-982-11	CERAMIC CHIP	1uF	10.00%	10V
C217	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C218	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C219	1-163-275-11	CERAMIC CHIP	0.001uF	5.00%	50V
C220	1-107-823-11	CERAMIC CHIP	0.47uF	10.00%	16V
C221	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C222	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C223	1-126-163-11	ELECT	4.7uF	20%	50V
C224	1-109-982-11	CERAMIC CHIP	1uF	10.00%	10V
					(ED55/ED66/ED88/ED89/ED95/EZ66/EZ77)
C225	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C226	1-163-089-00	CERAMIC CHIP	6PF		50V
C227	1-163-255-11	CERAMIC CHIP	150PF	5.00%	50V

Ref. No.	Part No.	Description			Remark
C228	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C229	1-126-163-11	ELECT	4.7uF	20%	50V
C230	1-163-227-11	CERAMIC CHIP	10PF	0.50PF	50V
			(ED66/ED88/ED89/ED95/EZ77)		
C230	1-163-233-11	CERAMIC CHIP	18PF	5.00%	50V
			(ED15/ED25/ED33/ED39/EZ11/EZ22)		
C230	1-163-235-11	CERAMIC CHIP	22PF	5.00%	50V
			(ED55/ED85/EZ44/EZ66)		
C231	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C232	1-163-231-11	CERAMIC CHIP	15PF	5.00%	50V
			(ED66/ED88/ED89/ED95/EZ77)		
C232	1-163-233-11	CERAMIC CHIP	18PF	5.00%	50V
			(ED15/ED25/ED33/ED39/EZ11/EZ22)		
C232	1-163-237-11	CERAMIC CHIP	27PF	5.00%	50V
			(ED55/ED85/EZ44/EZ66)		
C233	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C234	1-124-589-11	ELECT	47uF	20%	16V
C235	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C236	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C237	1-163-021-91	CERAMIC CHIP	0.01uF	10.00%	50V
			(ED33MJ/ED66MJ/ED88MJ)		
C237	1-164-232-11	CERAMIC CHIP	0.01uF		50V
			(EXCEPT ED33MJ/ED66MJ/ED88MJ)		
C238	1-126-157-11	ELECT	10uF	20%	16V
C239	1-163-021-91	CERAMIC CHIP	0.01uF	10.00%	50V
			(ED33MJ/ED66MJ/ED88MJ)		
C239	1-164-232-11	CERAMIC CHIP	0.01uF		50V
			(EXCEPT ED33MJ/ED66MJ/ED88MJ)		
C240	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C241	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C242	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C243	1-126-162-11	ELECT	3.3uF	20%	50V
C244	1-163-021-91	CERAMIC CHIP	0.01uF	10.00%	50V
			(ED33MJ/ED66MJ/ED88MJ)		
C244	1-164-232-11	CERAMIC CHIP	0.01uF		50V
			(EXCEPT ED33MJ/ED66MJ/ED88MJ)		
C245	1-126-157-11	ELECT	10uF	20%	16V
C246	1-163-021-91	CERAMIC CHIP	0.01uF	10.00%	50V
			(ED33MJ/ED66MJ/ED88MJ)		
C246	1-164-232-11	CERAMIC CHIP	0.01uF		50V
			(EXCEPT ED33MJ/ED66MJ/ED88MJ)		
C247	1-164-489-11	CERAMIC CHIP	0.22uF	10.00%	16V
C248	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C249	1-163-021-91	CERAMIC CHIP	0.01uF	10.00%	50V
			(ED33MJ/ED66MJ/ED88MJ)		
C249	1-164-232-11	CERAMIC CHIP	0.01uF		50V
			(EXCEPT ED33MJ/ED66MJ/ED88MJ)		
C251	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C252	1-163-263-11	CERAMIC CHIP	330PF	5.00%	50V
C253	1-109-982-11	CERAMIC CHIP	1uF	10.00%	10V
C254	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
			(ED55/ED66/ED85/ED88/ED89/		
			ED95/EZ44/EZ66/EZ77)		
C255	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
			(ED55/ED66/ED85/ED88/ED89/		
			ED95/EZ44/EZ66/EZ77)		
C256	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
			(ED55/ED66/ED85/ED88/ED89/		
			ED95/EZ44/EZ66/EZ77)		
C257	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
			(ED55/ED66/ED85/ED88/ED89/		
			ED95/EZ44/EZ66/EZ77)		
C258	1-109-982-11	CERAMIC CHIP	1uF	10.00%	10V

Ref. No.	Part No.	Description			Remark
C259	1-164-505-11	CERAMIC CHIP	2.2uF		16V
			(ED88/ED89/ED95: MN, TH/EZ77)		
C260	1-163-021-91	CERAMIC CHIP	0.01uF	10.00%	50V
					(ED88MJ)
C260	1-164-232-11	CERAMIC CHIP	0.01uF		50V
			(ED88: ME, SG/ED89/ED95: MN, TH/EZ77)		
C261	1-163-021-91	CERAMIC CHIP	0.01uF	10.00%	50V
					(ED88MJ)
C261	1-164-232-11	CERAMIC CHIP	0.01uF		50V
			(ED88: ME, SG/ED89/ED95: MN, TH/EZ77)		
C262	1-163-243-11	CERAMIC CHIP	47PF	5.00%	50V
C263	1-163-241-11	CERAMIC CHIP	39PF	5%	50V
C289	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
			(ED66/ED88/ED89/ED95/EZ77)		
C290	1-126-163-11	ELECT	4.7uF	20%	50V
			(ED66/ED88/ED89/ED95/EZ77)		
C291	1-164-489-11	CERAMIC CHIP	0.22uF	10.00%	16V
			(ED66/ED88/ED89/ED95/EZ77)		
C292	1-164-505-11	CERAMIC CHIP	2.2uF		16V
			(ED66/ED88/ED89/ED95/EZ77)		
C294	1-163-021-91	CERAMIC CHIP	0.01uF	10.00%	50V
					(ED66MJ/ED88MJ)
C294	1-164-232-11	CERAMIC CHIP	0.01uF		50V
			(ED66: ME, SG/ED88: ME, SG/ED89/ED95/EZ77)		
C295	1-163-021-91	CERAMIC CHIP	0.01uF	10.00%	50V
					(ED66MJ/ED88MJ)
C295	1-164-232-11	CERAMIC CHIP	0.01uF		50V
			(ED66: ME, SG/ED88: ME, SG/ED89/ED95/EZ77)		
C296	1-126-157-11	ELECT	10uF	20%	16V
			(ED66/ED88/ED89/ED95/EZ77)		
C298	1-126-163-11	ELECT	4.7uF	20%	50V
			(ED66/ED88/ED89/ED95/EZ77)		
C299	1-162-306-11	CERAMIC	0.01uF	30.00%	16V
			(ED66/ED88/ED89/ED95/EZ77)		
C303	1-164-505-11	CERAMIC CHIP	2.2uF		16V
			(ED85/ED88/ED89/ED95/EZ66/EZ77)		
C304	1-163-021-91	CERAMIC CHIP	0.01uF	10.00%	50V
					(ED88MJ)
C304	1-164-232-11	CERAMIC CHIP	0.01uF		50V
			(ED85/ED88: ME, SG/ED89/ED95/EZ66/EZ77)		
C307	1-124-589-11	ELECT	47uF	20%	16V
			(ED85/ED88/ED89/ED95/EZ66/EZ77)		
C308	1-126-964-11	ELECT	10uF	20.00%	50V
			(ED85/ED88/ED89/ED95/EZ66/EZ77)		
C309	1-163-020-00	CERAMIC CHIP	0.0082uF	10%	50V
			(ED85/ED88/ED89/ED95/EZ66/EZ77)		
C310	1-104-664-11	ELECT	47uF	20.00%	25V
			(ED85/ED88/ED89/ED95/EZ66/EZ77)		
C311	1-126-964-11	ELECT	10uF	20.00%	50V
			(ED85/ED88/ED89/ED95/EZ66/EZ77)		
C312	1-126-961-11	ELECT	2.2uF	20.00%	50V
			(ED85/ED88/ED89/ED95/EZ66/EZ77)		
C313	1-126-964-11	ELECT	10uF	20.00%	50V
			(ED85/ED88/ED89/ED95/EZ66/EZ77)		
C314	1-104-664-11	ELECT	47uF	20.00%	25V
			(ED85/ED88/ED89/ED95/EZ66/EZ77)		
C315	1-163-020-00	CERAMIC CHIP	0.0082uF	10%	50V
			(ED85/ED88/ED89/ED95/EZ66/EZ77)		
C316	1-126-964-11	ELECT	10uF	20.00%	50V
			(ED85/ED88/ED89/ED95/EZ66/EZ77)		
C317	1-126-960-11	ELECT	1uF	20.00%	50V
			(ED85/ED88/ED89/ED95/EZ66/EZ77)		
C318	1-126-964-11	ELECT	10uF	20.00%	50V
			(ED85/ED88/ED89/ED95/EZ66/EZ77)		
C319	1-126-964-11	ELECT	10uF	20.00%	50V
			(ED85/ED88/ED89/ED95/EZ66/EZ77)		

Ref. No.	Part No.	Description			Remark
C320	1-126-964-11	ELECT	10uF	20.00%	50V
					(ED85/ED88/ED89/ED95/EZ66/EZ77)
C322	1-126-964-11	ELECT	10uF	20.00%	50V
					(ED85/ED88/ED89/ED95/EZ66/EZ77)
C323	1-163-038-00	CERAMIC CHIP	0.1uF		25V
					(ED85/ED88/ED89/ED95/EZ66/EZ77)
C324	1-163-021-91	CERAMIC CHIP	0.01uF	10.00%	50V
					(ED88MJ)
C324	1-164-232-11	CERAMIC CHIP	0.01uF		50V
					(ED85/ED88: ME, SG/ED89/ED95/EZ66/EZ77)
C325	1-164-222-11	CERAMIC CHIP	0.22uF		25V
					(ED85/ED88/ED89/ED95/EZ66/EZ77)
C326	1-164-222-11	CERAMIC CHIP	0.22uF		25V
					(ED85/ED88/ED89/ED95/EZ66/EZ77)
C327	1-164-222-11	CERAMIC CHIP	0.22uF		25V
					(ED85/ED88/ED89/ED95/EZ66/EZ77)
C336	1-126-964-11	ELECT	10uF	20.00%	50V
					(ED85/ED88/ED89/ED95/EZ66/EZ77)
C351	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C352	1-124-589-11	ELECT	47uF	20%	16V
C353	1-126-163-11	ELECT	4.7uF	20%	50V
C354	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C355	1-124-234-00	ELECT	22uF	20%	16V
C356	1-124-261-00	ELECT	10uF	20%	50V
C357	1-163-011-11	CERAMIC CHIP	0.0015uF	10%	50V
C358	1-163-011-11	CERAMIC CHIP	0.0015uF	10%	50V
C359	1-126-163-11	ELECT	4.7uF	20%	50V
C360	1-126-157-11	ELECT	10uF	20%	16V
C361	1-126-160-11	ELECT	1uF	20%	50V
C362	1-124-234-00	ELECT	22uF	20%	16V
C364	1-126-163-11	ELECT	4.7uF	20%	50V
C365	1-126-160-11	ELECT	1uF	20%	50V
					(ED55/ED66)
C366	1-126-160-11	ELECT	1uF	20%	50V
C369	1-163-021-91	CERAMIC CHIP	0.01uF	10.00%	50V
					(ED33MJ/ED66MJ/ED88MJ)
C369	1-164-232-11	CERAMIC CHIP	0.01uF		50V
					(EXCEPT ED33MJ/ED66MJ/ED88MJ)
C371	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C373	1-137-360-11	MYLAR	220PF	5.00%	50V
C375	1-104-696-11	FILM	0.015uF	5.00%	100V
					(EXCEPT ED66/ED88/ED95: MN, TH/EZ77)
C375	1-137-612-11	FILM	0.0068uF	5.00%	100V
					(ED66/ED88/ED95: MN, TH/EZ77)
C376	1-163-011-11	CERAMIC CHIP	0.0015uF	10%	50V
C377	1-162-306-11	CERAMIC	0.01uF	30.00%	16V
C378	1-124-589-11	ELECT	47uF	20%	16V
C379	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C380	1-104-697-11	FILM	0.047uF	5.00%	100V
					(ED66/ED88/ED95: MN, TH/EZ77)
C381	1-124-589-11	ELECT	47uF	20%	16V
					(ED66/ED88/ED95: MN, TH/EZ77)
C382	1-163-011-11	CERAMIC CHIP	0.0015uF	10%	50V
					(ED66/ED88/ED95: MN, TH/EZ77)
C383	1-163-021-91	CERAMIC CHIP	0.01uF	10.00%	50V
					(ED66MJ/ED88MJ)
C383	1-164-232-11	CERAMIC CHIP	0.01uF		50V
					(ED66: ME, SG/ED88: ME, SG/ED95: MN, TH/EZ77)
C384	1-163-011-11	CERAMIC CHIP	0.0015uF	10%	50V
					(ED66/ED88/ED95: MN, TH/EZ77)
C451	1-124-589-11	ELECT	47uF	20%	16V
C452	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C453	1-126-157-11	ELECT	10uF	20%	16V
C454	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C651	1-163-021-91	CERAMIC CHIP	0.01uF	10.00%	50V
					(ED33MJ/ED66MJ/ED88MJ)
C651	1-164-232-11	CERAMIC CHIP	0.01uF		50V
					(EXCEPT ED33MJ/ED66MJ/ED88MJ)
C652	1-126-933-11	ELECT	100uF	20.00%	16V
C653	1-104-666-11	ELECT	220uF	20.00%	25V
C654	1-124-589-11	ELECT	47uF	20%	16V
C701	1-163-021-91	CERAMIC CHIP	0.01uF	10.00%	50V
					(ED33MJ/ED66MJ/ED88MJ)
C701	1-164-232-11	CERAMIC CHIP	0.01uF		50V
					(EXCEPT ED33MJ/ED66MJ/ED88MJ)
C702	1-163-021-91	CERAMIC CHIP	0.01uF	10.00%	50V
					(ED33MJ/ED66MJ/ED88MJ)
C702	1-164-232-11	CERAMIC CHIP	0.01uF		50V
					(EXCEPT ED33MJ/ED66MJ/ED88MJ)
C703	1-126-933-11	ELECT	100uF	20.00%	16V
C704	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
					(EXCEPT ED33MJ/ED66MJ/ED88MJ)
C704	1-163-021-91	CERAMIC CHIP	0.01uF	10.00%	50V
					(ED33MJ/ED66MJ/ED88MJ)
C705	1-163-021-91	CERAMIC CHIP	0.01uF	10.00%	50V
					(ED33MJ/ED66MJ/ED88MJ)
C705	1-164-232-11	CERAMIC CHIP	0.01uF		50V
					(EXCEPT ED33MJ/ED66MJ/ED88MJ)
C706	1-126-933-11	ELECT	100uF	20.00%	16V
C707	1-104-664-11	ELECT	47uF	20.00%	25V
C708	1-126-963-11	ELECT	4.7uF	20.00%	50V
C709	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C710	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C711	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C712	1-104-665-11	ELECT	100uF	20.00%	25V
					(EXCEPT ED95MI)
C712	1-126-767-11	ELECT	1000uF	20.00%	16V
					(ED95MI)
C713	1-163-021-91	CERAMIC CHIP	0.01uF	10.00%	50V
					(ED33MJ/ED66MJ/ED88MJ)
C713	1-164-232-11	CERAMIC CHIP	0.01uF		50V
					(EXCEPT ED33MJ/ED66MJ/ED88MJ)
C715	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
					(ED95/EZ77NZ)
C716	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
					(ED95/EZ77NZ)
C717	1-164-232-11	CERAMIC CHIP	0.01uF		50V
					(ED95/EZ77)
C718	1-126-933-11	ELECT	100uF	20.00%	16V
					(ED95/EZ77)
C719	1-163-038-00	CERAMIC CHIP	0.1uF		25V
					(ED95MI)
C721	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
					(ED95MI)
C722	1-126-933-11	ELECT	100uF	20.00%	16V
C723	1-163-021-91	CERAMIC CHIP	0.01uF	10.00%	50V
					(ED33MJ/ED66MJ/ED88MJ)
C723	1-164-232-11	CERAMIC CHIP	0.01uF		50V
					(EXCEPT ED33MJ/ED66MJ/ED88MJ)
C901	1-126-960-11	ELECT	1uF	20.00%	50V
					(ED85/ED88/ED89/ED95/EZ66/EZ77)
C902	1-126-160-11	ELECT	1uF	20%	50V
					(ED85/ED88/ED89/ED95/EZ66/EZ77)
C903	1-126-160-11	ELECT	1uF	20%	50V
					(EXCEPT ED85/ED95MI/EZ66)
C904	1-126-960-11	ELECT	1uF	20.00%	50V
					(ED88/ED89/ED95: MN, TH/EZ77)

Ref. No.	Part No.	Description	Remark
C905	1-126-925-11	ELECT 470uF 20.00% 10V	(ED85/ED88/ED89/ED95/EZ66/EZ77)
C906	1-104-664-11	ELECT 47uF 20.00% 25V	(ED85/ED88/ED89/ED95/EZ66/EZ77)
C909	1-126-160-11	ELECT 1uF 20% 50V	(ED88/ED89/ED95/EZ66/EZ77)
C910	1-126-160-11	ELECT 1uF 20% 50V	(ED55/ED66/ED88/ED89/ED95/EZ66/EZ77)
C912	1-126-925-11	ELECT 470uF 20.00% 10V	(ED15/ED25/ED33/ED39/ED55/ED66/EZ11/EZ22/EZ44)
C914	1-104-664-11	ELECT 47uF 20.00% 25V	
C915	1-164-346-11	CERAMIC CHIP 1uF 16V	(ED85/ED88/ED89/ED95/EZ66/EZ77)
C916	1-164-346-11	CERAMIC CHIP 1uF 16V	
		< CONNECTOR >	
* CN031	1-766-716-11	CONNECTOR, BOARD TO BOARD 3P	
CN051	1-779-723-11	CONNECTOR, BOARD TO BOARD 9P	
CN071	1-784-486-11	CONNECTOR, FFC/FPC 7P	(ED15/ED25/ED33/ED39/EZ11/EZ22)
CN072	1-784-484-11	CONNECTOR, FFC/FPC 5P	(EXCEPT ED15/ED25/ED33/ED39/EZ11/EZ22)
CN104	1-506-470-11	PIN, CONNECTOR 5P	
CN201	1-784-490-11	CONNECTOR, FFC/FPC 11P	(ED85/ED88/ED89/ED95/EZ66/EZ77)
* CN202	1-560-892-00	PIN, CONNECTOR 4P	
CN203	1-691-166-11	PIN, CONNECTOR 9P (ED39/ED89)	
CN204	1-784-485-11	CONNECTOR, FFC/FPC 6P	(EXCEPT ED85/ED88/ED89/ED95/EZ66/EZ77)
CN331	1-784-486-11	CONNECTOR, FFC/FPC 7P	
CN332	1-506-468-11	PIN, CONNECTOR 3P	
CN401	1-784-484-11	CONNECTOR, FFC/FPC 5P	
CN411	1-784-486-11	CONNECTOR, FFC/FPC 7P	
CN600	1-778-674-21	CONNECTOR, BOARD TO BOARD 19P	
CN701	1-691-170-11	PIN, CONNECTOR 13P (ED95/EZ77)	
CN901	1-784-486-11	CONNECTOR, FFC/FPC 7P	(ED55/ED66/ED88/ED89/ED95/EZ66/EZ77)
		< JACK >	
CNJ901	1-779-011-11	JACK, PIN 6P (LINE-1 IN/LINE-3 IN)	(ED88/ED89/ED95: MN, TH/EZ77) (ED88MJ)
CNJ902	1-794-161-11	JACK, PHONO 5P (LINE-1 OUT/LINE-2 OUT)	(ED85/ED88/ED89/ED95/EZ66/EZ77)
CNJ903	1-779-012-21	JACK, PIN 5P (LINE-1 IN/LINE-1 OUT)	(ED55/ED66/EZ44)
CNJ904	1-779-010-11	JACK, PIN 4P (LINE-1 IN/LINE-1 OUT)	(ED15/ED25/ED33/ED39/EZ11/EZ22)
CNJ905	1-784-412-11	JACK, PIN 3P (LINE-1 IN)	(ED85/ED95MI/EZ66)
		< DIODE >	
D001	8-719-048-26	DIODE GL528V1 (T/S LED)	
D071	8-719-200-82	DIODE MPG06D-6052PKG3	(EXCEPT ED33MJ/ED66MJ/ED88MJ)
D071	8-719-950-60	DIODE MPG06D-6052PKG23	(ED33MJ/ED66MJ/ED88MJ)
D101	8-719-421-09	DIODE MA723- (TA)	
D102	8-719-421-09	DIODE MA723- (TA)	
D151	8-719-911-19	DIODE 1SS119-25TD	
D401	8-719-045-62	DIODE SLR-342VCT31 (SYNCHRO REC)	(ED85/ED88/ED89/ED95/EZ66/EZ77)
D403	8-719-056-06	DIODE SLR-342DCT31 (R^2)	(ED66/ED88/ED89/ED95/EZ77)
D651	8-719-911-19	DIODE 1SS119-25TD	
D701	8-719-119-22	DIODE RD33F-T7B1	
D901	8-719-109-93	DIODE RD6.2ES-T1B	
		< TERMINAL >	
ET201	1-537-770-21	TERMINAL BOARD, GROUND	(ED85/ED88/ED89/ED95/EZ66/EZ77)
		< FILTER >	
FL901	1-236-163-11	ENCAPSULATED COMPONENT (EZ66/EZ77)	
FL902	1-236-163-11	ENCAPSULATED COMPONENT (EZ66/EZ77)	
FL903	1-236-163-11	ENCAPSULATED COMPONENT	(ED88MJ/EZ11/EZ22/EZ44/EZ77)
FL904	1-236-163-11	ENCAPSULATED COMPONENT (ED88MJ/EZ77)	
		< IC >	
IC031	8-759-645-07	IC LB1943N	
IC101	8-759-662-50	IC HD6433977R-GA	(EXCEPT ED95MI/EZ11/EZ22/EZ44/EZ66/EZ77)
IC101	8-759-662-51	IC HD6433977R-AZ (EZ22/EZ44/EZ66)	
IC101	8-759-662-52	IC HD6433977R-AS (EZ77AS)	
IC101	8-759-662-53	IC HD6433977R-NZ (EZ77NZ)	
IC101	8-759-662-54	IC HD6433977R-MI (ED95MI)	
IC101	8-759-662-55	IC HD6433977R-AZD (EZ11)	
IC141	8-759-580-62	IC MM1256AFBE	
IC142	8-759-575-70	IC M24C02-WMN6T	
IC201	8-759-589-31	IC HA118217F	
IC202	8-759-295-66	IC BA7653AF-E2	(ED88/ED89/ED95: MN, TH/EZ77)
IC291	8-759-566-07	IC LA7277M-TLM	(ED66/ED88/ED89/ED95/EZ77)
IC360	8-759-638-56	IC TDA9605H/N2, 557	(ED85/ED88/ED89/ED95/EZ66/EZ77)
IC451	8-759-566-61	IC uPD16312GB-3BS	
IC651	8-759-471-81	IC PQ05RD11	
IC652	8-759-438-18	IC PQ12RD08	
IC653	8-759-512-69	IC S-81350HG-KD-T1	
		< JUMPER RESISTOR >	
JR001	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR002	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR003	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR004	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR005	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR006	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR007	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR008	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR009	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR010	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR011	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR012	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR013	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR014	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR015	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR016	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR017	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR018	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR019	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR020	1-216-295-00	METAL CHIP 0 5% 1/10W	

Ref. No.	Part No.	Description			Remark
JR021	1-216-295-00	METAL CHIP	0	5%	1/10W
JR022	1-216-295-00	METAL CHIP	0	5%	1/10W
JR023	1-216-295-00	METAL CHIP	0	5%	1/10W
JR024	1-216-295-00	METAL CHIP	0	5%	1/10W
JR101	1-216-296-00	METAL CHIP	0	5%	1/8W
JR102	1-216-296-00	METAL CHIP	0	5%	1/8W
JR103	1-216-296-00	METAL CHIP	0	5%	1/8W
JR104	1-216-296-00	METAL CHIP	0	5%	1/8W
JR105	1-216-296-00	METAL CHIP	0	5%	1/8W
JR106	1-216-296-00	METAL CHIP	0	5%	1/8W
JR107	1-216-296-00	METAL CHIP	0	5%	1/8W
JR108	1-216-296-00	METAL CHIP	0	5%	1/8W
JR109	1-216-296-00	METAL CHIP	0	5%	1/8W
JR110	1-216-296-00	METAL CHIP	0	5%	1/8W
JR111	1-216-296-00	METAL CHIP	0	5%	1/8W
JR112	1-216-296-00	METAL CHIP	0	5%	1/8W
JR113	1-216-296-00	METAL CHIP	0	5%	1/8W
JR114	1-216-296-00	METAL CHIP	0	5%	1/8W
JR115	1-216-296-00	METAL CHIP	0	5%	1/8W
JR116	1-216-296-00	METAL CHIP	0	5%	1/8W
JR117	1-216-296-00	METAL CHIP	0	5%	1/8W
JR118	1-216-296-00	METAL CHIP	0	5%	1/8W
JR119	1-216-296-00	METAL CHIP	0	5%	1/8W
JR120	1-216-296-00	METAL CHIP	0	5%	1/8W
JR121	1-216-296-00	METAL CHIP	0	5%	1/8W
JR122	1-216-296-00	METAL CHIP	0	5%	1/8W
JR123	1-216-296-00	METAL CHIP	0	5%	1/8W
JR124	1-216-296-00	METAL CHIP	0	5%	1/8W
JR125	1-216-296-00	METAL CHIP	0	5%	1/8W
JR126	1-216-296-00	METAL CHIP	0	5%	1/8W
JR127	1-216-296-00	METAL CHIP	0	5%	1/8W
JS151	1-216-295-00	METAL CHIP	0	5%	1/10W (EXCEPT ED95MI)
JS201	1-216-295-00	METAL CHIP	0	5%	1/10W (EXCEPT ED39/ED89)
JS202	1-216-295-00	METAL CHIP	0	5%	1/10W (ED55/ED66/ED95MI/EZ66)
JS203	1-216-295-00	METAL CHIP	0	5%	1/10W (ED15/ED25/ED33/ED39/ED55/ ED66/EZ11/EZ22/EZ44)
JS332	1-216-295-00	METAL CHIP	0	5%	1/10W (ED15/ED25/ED33/ED39/ED55/ ED66/EZ11/EZ22/EZ44)
JS372	1-216-295-00	METAL CHIP	0	5%	1/10W
JS373	1-216-295-00	METAL CHIP	0	5%	1/10W (EXCEPT ED33MJ)
JS701	1-216-295-00	METAL CHIP	0	5%	1/10W (EXCEPT ED95MI)
JS702	1-216-295-00	METAL CHIP	0	5%	1/10W (ED95MI)
JS703	1-216-295-00	METAL CHIP	0	5%	1/10W (EXCEPT ED95MI)
JS704	1-216-295-00	METAL CHIP	0	5%	1/10W (ED95MI)
JS705	1-216-295-00	METAL CHIP	0	5%	1/10W (ED95MI)
JS706	1-216-295-00	METAL CHIP	0	5%	1/10W (EXCEPT ED95MI)
JS709	1-216-295-00	METAL CHIP	0	5%	1/10W (ED95MI)
JS710	1-216-295-00	METAL CHIP	0	5%	1/10W
JS712	1-216-295-00	METAL CHIP	0	5%	1/10W
JS718	1-216-295-00	METAL CHIP	0	5%	1/10W (ED85/ED88/ED89/EZ66)
JS719	1-216-295-00	METAL CHIP	0	5%	1/10W (ED85/ED88/ED89/EZ66)
JS720	1-216-295-00	METAL CHIP	0	5%	1/10W
JS721	1-216-295-00	METAL CHIP	0	5%	1/10W (ED95/EZ77)
JS723	1-216-295-00	METAL CHIP	0	5%	1/10W (ED95/EZ77)
JS724	1-216-295-00	METAL CHIP	0	5%	1/10W (ED95/EZ77)
JS727	1-216-295-00	METAL CHIP	0	5%	1/10W (ED95/EZ77)
JS728	1-216-295-00	METAL CHIP	0	5%	1/10W (ED95/EZ77)
JS731	1-216-296-00	METAL CHIP	0	5%	1/8W
JS901	1-216-295-00	METAL CHIP	0	5%	1/10W (ED85/ED88/ED89/ED95)
JS902	1-216-295-00	METAL CHIP	0	5%	1/10W (ED85/ED88/ED89/ED95)
JS905	1-216-295-00	METAL CHIP	0	5%	1/10W (ED55/ED66/EZ44)
JS909	1-216-295-00	METAL CHIP	0	5%	1/10W (ED15/ED25/ED33/ED39/ED55/ ED66/EZ11/EZ22/EZ44)
JS910	1-216-295-00	METAL CHIP	0	5%	1/10W
JS913	1-216-295-00	METAL CHIP	0	5%	1/10W (ED85/ED88/ED89/ED95/EZ66/EZ77)

< COIL >

Ref. No.	Part No.	Description		Remark
L071	1-414-185-51	INDUCTOR	22uH	(ED15/ED25/ED33/ED39/EZ11/EZ22)
L151	1-414-185-51	INDUCTOR	22uH	
L152	1-414-184-51	INDUCTOR	15uH	
L171	1-414-185-51	INDUCTOR	22uH	
L172	1-414-185-51	INDUCTOR	22uH	
L202	1-414-856-51	INDUCTOR	10uH	
L203	1-410-520-11	INDUCTOR	82uH	(ED15/ED25/ED33/ED39/EZ11/EZ22)
L203	1-410-521-11	INDUCTOR	100uH	(EXCEPT ED15/ED25/ED33/ED39/EZ11/EZ22)
L204	1-410-510-11	INDUCTOR	12uH	
L205	1-410-520-11	INDUCTOR	82uH	(ED15/ED25/ED33/ED39/EZ11/EZ22)
L205	1-410-521-11	INDUCTOR	100uH	(EXCEPT ED15/ED25/ED33/ED39/EZ11/EZ22)
L206	1-414-857-51	INDUCTOR	100uH	
L207	1-414-856-51	INDUCTOR	10uH	
L208	1-216-295-00	METAL CHIP	0 5% 1/10W	(EXCEPT ED15/ED25/ED33/ED39/EZ11/EZ22)
L208	1-410-997-31	INDUCTOR CHIP	2.2uH	(ED15/ED25/ED33/ED39/EZ11/EZ22)
L209	1-216-295-00	METAL CHIP	0 5% 1/10W	(EXCEPT ED15/ED25/ED33/ED39/EZ11/EZ22)
L209	1-410-997-31	INDUCTOR CHIP	2.2uH	(ED15/ED25/ED33/ED39/EZ11/EZ22)
L210	1-216-295-00	METAL CHIP	0 5% 1/10W	(EXCEPT ED15/ED25/ED33/ED39/EZ11/EZ22)
L210	1-410-997-31	INDUCTOR CHIP	2.2uH	(ED15/ED25/ED33/ED39/EZ11/EZ22)
L214	1-414-856-51	INDUCTOR	10uH	
L215	1-414-187-51	INDUCTOR	47uH	
L301	1-414-857-51	INDUCTOR	100uH	(ED85/ED88/ED89/ED95/EZ66/EZ77)

Ref. No.	Part No.	Description	Remark
L302	1-414-857-51	INDUCTOR 100uH	(ED85/ED88/ED89/ED95/EZ66/EZ77)
L351	1-414-857-51	INDUCTOR 100uH	
L371	1-410-120-11	INDUCTOR 1.2mH	
L380	1-410-120-11	INDUCTOR 1.2mH	(ED66/ED88/ED95: MN, TH/EZ77)
L700	1-414-856-51	INDUCTOR 10uH	
L701	1-414-856-51	INDUCTOR 10uH	
L702	1-414-856-51	INDUCTOR 10uH	
L703	1-414-856-51	INDUCTOR 10uH	
L704	1-414-187-51	INDUCTOR 47uH	
L705	1-414-856-51	INDUCTOR 10uH (ED95/EZ77)	
L900	1-414-857-51	INDUCTOR 100uH	(ED85/ED88/ED89/ED95/EZ66/EZ77)
L901	1-414-857-51	INDUCTOR 100uH	
		< FLUORESCENT INDICATOR TUBE >	
ND451	1-517-734-11	TUBE, FLUORESCENT INDICATOR	
		< PHOTO INTERRUPTER >	
PH001	8-749-013-23	PHOTO INTERRUPTER GP3S120	
PH002	8-749-013-23	PHOTO INTERRUPTER GP3S120	
		< IC LINK >	
⚠PS071	1-533-593-11	LINK, IC (2A)	
⚠PS331	1-533-586-31	LINK, IC (315mA)	
		< TRANSISTOR >	
Q001	8-729-043-84	TRANSISTOR PT380F3	
Q002	8-729-043-84	TRANSISTOR PT380F3	
Q003	8-729-281-53	TRANSISTOR 2SC1815GR-TPE2	
Q151	8-729-421-22	TRANSISTOR UN2211-TX (ED95MI)	
Q152	8-729-424-08	TRANSISTOR UN2111-TX (ED95MI)	
Q153	8-729-422-27	TRANSISTOR 2SD601A-QRS-TX	
Q171	8-729-421-22	TRANSISTOR UN2211-TX	
Q172	8-729-216-22	TRANSISTOR 2SB709A-QRS-TX	
Q174	8-729-421-22	TRANSISTOR UN2211-TX	
Q175	8-729-422-27	TRANSISTOR 2SD601A-QRS-TX	(EXCEPT EZ11/EZ22/EZ44/EZ66/EZ77)
Q191	8-729-422-27	TRANSISTOR 2SD601A-QRS-TX	(ED66/ED88/ED95: MN, TH/EZ77)
Q192	8-729-421-22	TRANSISTOR UN2211-TX	(ED66/ED88/ED95: MN, TH/EZ77)
Q201	8-729-422-27	TRANSISTOR 2SD601A-QRS-TX	(ED39/ED89)
Q202	8-729-421-19	TRANSISTOR MUN2213T1	
Q203	8-729-421-19	TRANSISTOR UN2213-TX	
Q204	8-729-421-19	TRANSISTOR MUN2213T1	
Q206	8-729-421-19	TRANSISTOR UN2213-TX	
Q210	8-729-421-19	TRANSISTOR UN2213-TX	
Q211	8-729-422-27	TRANSISTOR 2SD601A-QRS-TX	
Q337	8-729-216-21	TRANSISTOR 2SA1162Y-TE85L	(ED85/ED88/ED89/ED95/EZ66/EZ77)
Q338	8-729-230-49	TRANSISTOR 2SC2712Y-TE85L	(ED85/ED88/ED89/ED95/EZ66/EZ77)
Q339	8-729-230-49	TRANSISTOR 2SC2712Y-TE85L	(ED85/ED88/ED89/ED95/EZ66/EZ77)
Q372	8-729-422-27	TRANSISTOR 2SD601A-QRS-TX	
Q373	8-729-422-27	TRANSISTOR 2SD601A-QRS-TX	
Q374	8-729-901-06	TRANSISTOR MUN2113T1	
Q375	8-729-012-31	TRANSISTOR 2SC4040-TL2-Q	
Q376	8-729-900-51	TRANSISTOR UN2115-QRS (TX)	
Q380	8-729-900-51	TRANSISTOR UN2115-QRS (TX)	(ED66/ED88/ED95: MN, TH/EZ77)
Q381	8-729-012-31	TRANSISTOR 2SC4040-TL2-Q	(ED66/ED88/ED95: MN, TH/EZ77)
Q701	8-729-106-68	TRANSISTOR 2SD1664-T100-R	
Q703	8-729-216-22	TRANSISTOR 2SB709A-QRS-TX	(ED95: MN, TH/EZ77)
Q706	8-729-421-19	TRANSISTOR UN2213-TX	
Q707	8-729-804-41	TRANSISTOR 2SB1122-ST-TD	
Q901	8-729-216-22	TRANSISTOR 2SB709A-QRS-TX	(ED85/ED88/ED89/ED95/EZ66/EZ77)
Q902	8-729-216-22	TRANSISTOR 2SB709A-QRS-TX	
Q903	8-729-216-22	TRANSISTOR 2SB709A-QRS-TX	
Q904	8-729-216-22	TRANSISTOR 2SB709A-QRS-TX	(ED85/ED88/ED89/ED95/EZ66/EZ77)
		< RESISTOR >	
R001	1-249-413-11	CARBON 470 5% 1/4W	
R003	1-249-421-11	CARBON 2.2K 5% 1/4W	
R004	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R005	1-249-401-11	CARBON 47 5% 1/4W	
R006	1-249-401-11	CARBON 47 5% 1/4W	
R007	1-216-089-00	METAL CHIP 47K 5% 1/10W	
R008	1-249-437-11	CARBON 47K 5% 1/4W	
R009	1-249-435-11	CARBON 33K 5% 1/4W	
R010	1-249-435-11	CARBON 33K 5% 1/4W	
R032	1-216-089-00	METAL CHIP 47K 5% 1/10W	
R033	1-216-077-91	RES, CHIP 15K 5% 1/10W	
R051	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R052	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R053	1-247-843-11	CARBON 3.3K 5% 1/4W	
R054	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R055	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R056	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R057	1-249-429-11	CARBON 10K 5% 1/4W	
R071	1-216-103-00	METAL CHIP 180K 5% 1/10W	
R072	1-216-089-00	METAL CHIP 47K 5% 1/10W	(EXCEPT ED15/ED25/ED33/ED39/EZ11/EZ22)
R072	1-216-103-00	METAL CHIP 180K 5% 1/10W	(ED15/ED25/ED33/ED39/EZ11/EZ22)
R073	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R074	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R075	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R076	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R101	1-247-863-91	CARBON 22K 5% 1/4W	(ED89)
R101	1-249-418-11	CARBON 1.2K 5% 1/4W	(ED15/ED25/ED33/EZ11/EZ22)
R101	1-249-422-11	CARBON 2.7K 5% 1/4W	(ED39)
R101	1-249-425-11	CARBON 4.7K 5% 1/4W	(ED55/EZ44)
R101	1-249-427-11	CARBON 6.8K 5% 1/4W	(ED66)
R101	1-249-429-11	CARBON 10K 5% 1/4W	(ED85/EZ66)

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description			Remark
R101	1-249-431-11	CARBON	15K	5%	1/4W
					(ED88/ED95MI)
R102	1-249-429-11	CARBON	10K	5%	1/4W
R103	1-249-417-11	CARBON	1K	5%	1/4W
R104	1-249-403-11	CARBON	68	5%	1/4W
R105	1-249-429-11	CARBON	10K	5%	1/4W
R106	1-216-295-00	METAL CHIP	0	5%	1/10W
					(ED85/ED88/ED89/ED95/EZ66/EZ77)
R107	1-216-049-00	METAL CHIP	1K	5%	1/10W
R108	1-216-073-00	METAL CHIP	10K	5%	1/10W
R109	1-216-049-00	METAL CHIP	1K	5%	1/10W
R110	1-249-429-11	CARBON	10K	5%	1/4W
R111	1-247-863-91	CARBON	22K	5%	1/4W
					(EXCEPT ED33MJ/ED66MJ/ED88MJ)
R111	1-249-433-11	CARBON	22K	5%	1/4W
					(ED33MJ/ED66MJ/ED88MJ)
R112	1-216-041-00	METAL CHIP	470	5%	1/10W
R113	1-216-041-00	METAL CHIP	470	5%	1/10W
R114	1-216-041-00	METAL CHIP	470	5%	1/10W
R115	1-249-413-11	CARBON	470	5%	1/4W
R116	1-216-089-00	METAL CHIP	47K	5%	1/10W
R117	1-249-417-11	CARBON	1K	5%	1/4W
R118	1-216-089-00	METAL CHIP	47K	5%	1/10W
R119	1-216-089-00	METAL CHIP	47K	5%	1/10W
R120	1-249-437-11	CARBON	47K	5%	1/4W
R121	1-249-417-11	CARBON	1K	5%	1/4W
R122	1-216-121-91	RES, CHIP	1M	5%	1/10W
R123	1-216-073-00	METAL CHIP	10K	5%	1/10W
R125	1-216-089-00	METAL CHIP	47K	5%	1/10W
R127	1-216-073-00	METAL CHIP	10K	5%	1/10W
R128	1-216-073-00	METAL CHIP	10K	5%	1/10W
R129	1-249-441-11	CARBON	100K	5%	1/4W
					(ED85/ED88/ED89/ED95/EZ66/EZ77)
R130	1-216-049-00	METAL CHIP	1K	5%	1/10W
					(ED85/ED88/ED89/ED95/EZ66/EZ77)
R131	1-216-073-00	METAL CHIP	10K	5%	1/10W
R142	1-247-887-00	CARBON	220K	5%	1/4W
R143	1-216-113-00	METAL CHIP	470K	5%	1/10W
R144	1-216-105-91	RES, CHIP	220K	5%	1/10W
R151	1-216-113-00	METAL CHIP	470K	5%	1/10W
R152	1-216-025-91	RES, CHIP	100	5%	1/10W
R153	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R154	1-216-049-00	METAL CHIP	1K	5%	1/10W
R155	1-216-121-91	RES, CHIP	1M	5%	1/10W
R156	1-216-081-00	METAL CHIP	22K	5%	1/10W
R157	1-249-429-11	CARBON	10K	5%	1/4W
R158	1-216-073-00	METAL CHIP	10K	5%	1/10W
R159	1-249-417-11	CARBON	1K	5%	1/4W
R161	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R162	1-249-429-11	CARBON	10K	5%	1/4W
R163	1-249-417-11	CARBON	1K	5%	1/4W
R164	1-216-049-00	METAL CHIP	1K	5%	1/10W
R165	1-249-429-11	CARBON	10K	5%	1/4W
R166	1-216-295-00	METAL CHIP	0	5%	1/10W
R167	1-216-295-00	METAL CHIP	0	5%	1/10W
R171	1-216-049-00	METAL CHIP	1K	5%	1/10W
R172	1-247-807-31	CARBON	100	5%	1/4W
R174	1-216-045-00	METAL CHIP	680	5%	1/10W
R175	1-216-041-00	METAL CHIP	470	5%	1/10W
R176	1-249-429-11	CARBON	10K	5%	1/4W
					(EXCEPT EZ11/EZ22/EZ44/EZ66/EZ77)

Ref. No.	Part No.	Description			Remark
R177	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R178	1-216-033-00	METAL CHIP	220	5%	1/10W
					(EXCEPT EZ11/EZ22/EZ44/EZ66/EZ77)
R191	1-249-437-11	CARBON	47K	5%	1/4W
					(ED66/ED88/ED95: MN, TH/EZ77)
R192	1-216-103-00	METAL CHIP	180K	5%	1/10W
R193	1-216-121-91	RES, CHIP	1M	5%	1/10W
R194	1-216-049-00	METAL CHIP	1K	5%	1/10W
R201	1-216-073-00	METAL CHIP	10K	5%	1/10W
					(ED39/ED89)
R202	1-216-025-00	METAL CHIP	100	5%	1/10W
					(EXCEPT ED15/ED25/ED33/ED39/EZ11/EZ22)
R202	1-216-033-00	METAL CHIP	220	5%	1/10W
					(ED15/ED25/ED33/ED39/EZ11/EZ22)
R204	1-216-083-00	METAL CHIP	27K	5%	1/10W
R205	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R206	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R207	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R208	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
					(ED15/ED25/ED33/ED39/EZ11/EZ22)
R208	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
					(ED55/ED85/EZ44/EZ66)
R208	1-216-073-00	METAL CHIP	10K	5%	1/10W
					(ED66/ED88/ED89/ED95/EZ77)
R209	1-216-051-00	METAL CHIP	1.2K	5%	1/10W
					(ED15/ED25/ED33/ED39/EZ11/EZ22)
R209	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
					(ED66/ED88/ED89/ED95/EZ77)
R209	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
					(ED55/ED85/EZ44/EZ66)
R211	1-216-295-00	METAL CHIP	0	5%	1/10W
					(ED66/ED88/ED89/ED95/EZ77)
R212	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
					(EXCEPT ED66/ED88/ED89/ED95/EZ77)
R213	1-249-417-11	CARBON	1K	5%	1/4W
					(ED39/ED89)
R214	1-216-025-00	METAL CHIP	100	5%	1/10W
					(ED55/ED66/ED88/ED89/ED95/EZ66/EZ77)
R215	1-216-025-91	RES, CHIP	100	5%	1/10W
R216	1-247-807-31	CARBON	100	5%	1/4W
R217	1-216-041-00	METAL CHIP	470	5%	1/10W
					(EZ11/EZ22/EZ44/EZ66/EZ77)
R218	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R219	1-259-880-11	CARBON	2.2M	5%	1/4W
R222	1-216-033-00	METAL CHIP	220	5%	1/10W
R223	1-216-033-00	METAL CHIP	220	5%	1/10W
R224	1-216-049-00	METAL CHIP	1K	5%	1/10W
R225	1-216-049-00	METAL CHIP	1K	5%	1/10W
R226	1-216-099-00	METAL CHIP	120K	5%	1/10W
R227	1-216-049-00	METAL CHIP	1K	5%	1/10W
R228	1-216-049-00	METAL CHIP	1K	5%	1/10W
R289	1-216-049-00	METAL CHIP	1K	5%	1/10W
					(ED66/ED88/ED89/ED95/EZ77)
R291	1-208-806-11	METAL CHIP	10K	0.5%	1/10W
					(ED66/ED88/ED89/ED95/EZ77)
R294	1-247-807-31	CARBON	100	5%	1/4W
					(ED66/ED88/ED89/ED95/EZ77)
R295	1-247-807-31	CARBON	100	5%	1/4W
					(ED66/ED88/ED89/ED95/EZ77)
R296	1-216-073-00	METAL CHIP	10K	5%	1/10W
					(ED66/ED88/ED89/ED95/EZ77)
R299	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
					(ED66/ED88/ED89/ED95/EZ77)

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Ref. No.	Part No.	Description			Remark
R301	1-249-429-11	CARBON	10K	5%	1/4W
					(ED85/ED88/ED89/ED95/EZ66/EZ77)
R306	1-216-083-00	METAL CHIP	27K	5%	1/10W
					(ED85/ED88/ED89/ED95/EZ66/EZ77)
R307	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
					(ED85/ED88/ED89/ED95/EZ66/EZ77)
R308	1-208-820-11	METAL CHIP	39K	0.5%	1/10W
					(ED85/ED88/ED89/ED95/EZ66/EZ77)
R311	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
					(ED85/ED88/ED89/ED95/EZ66/EZ77)
R312	1-216-083-00	METAL CHIP	27K	5%	1/10W
					(ED85/ED88/ED89/ED95/EZ66/EZ77)
R313	1-216-133-00	METAL CHIP	3.3M	5%	1/10W
					(ED85/ED88/ED89/ED95/EZ66/EZ77)
R319	1-216-041-00	METAL CHIP	470	5%	1/10W
R320	1-216-049-00	METAL CHIP	1K	5%	1/10W
					(ED85/ED88/ED89/ED95/EZ66/EZ77)
R321	1-216-049-00	METAL CHIP	1K	5%	1/10W
					(ED85/ED88/ED89/ED95/EZ66/EZ77)
R322	1-216-079-00	METAL CHIP	18K	5%	1/10W
					(ED85/ED88/ED89/ED95/EZ66/EZ77)
R323	1-216-295-00	METAL CHIP	0	5%	1/10W
					(ED85/ED88/ED89/ED95/EZ66/EZ77)
R324	1-216-295-00	METAL CHIP	0	5%	1/10W
					(ED85/ED88/ED89/ED95/EZ66/EZ77)
R325	1-216-295-00	METAL CHIP	0	5%	1/10W
					(ED88/ED89/ED95: MN, TH/EZ77)
R326	1-216-295-00	METAL CHIP	0	5%	1/10W
					(ED88/ED89/ED95: MN, TH/EZ77)
R327	1-216-295-00	METAL CHIP	0	5%	1/10W
					(ED88/ED89/ED95/EZ66/EZ77)
R328	1-216-295-00	METAL CHIP	0	5%	1/10W
					(ED88/ED89/ED95/EZ66/EZ77)
R329	1-216-041-00	METAL CHIP	470	5%	1/10W
					(ED85/ED88/ED89/ED95/EZ66/EZ77)
R330	1-216-073-00	METAL CHIP	10K	5%	1/10W
					(ED85/ED88/ED89/ED95/EZ66/EZ77)
R331	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
					(ED85/ED88/ED89/ED95/EZ66/EZ77)
R332	1-216-049-00	METAL CHIP	1K	5%	1/10W
					(ED85/ED88/ED89/ED95/EZ66/EZ77)
R333	1-216-049-00	METAL CHIP	1K	5%	1/10W
					(ED85/ED88/ED89/ED95/EZ66/EZ77)
R350	1-216-073-00	METAL CHIP	10K	5%	1/10W
R351	1-216-063-91	RES, CHIP	3.9K	5%	1/10W
R352	1-216-103-00	METAL CHIP	180K	5%	1/10W
R353	1-216-027-00	METAL CHIP	120	5%	1/10W
R354	1-216-083-00	METAL CHIP	27K	5%	1/10W
R355	1-216-079-00	METAL CHIP	18K	5%	1/10W
R356	1-216-083-00	METAL CHIP	27K	5%	1/10W
R357	1-216-295-00	METAL CHIP	0	5%	1/10W
R359	1-249-437-11	CARBON	47K	5%	1/4W
R360	1-216-077-91	RES, CHIP	15K	5%	1/10W
R361	1-216-295-00	METAL CHIP	0	5%	1/10W
R363	1-216-077-91	RES, CHIP	15K	5%	1/10W
R364	1-249-437-11	CARBON	47K	5%	1/4W
R365	1-216-125-00	METAL CHIP	1.5M	5%	1/10W
R366	1-216-077-91	RES, CHIP	15K	5%	1/10W
					(ED55/ED66)
R367	1-249-437-11	CARBON	47K	5%	1/4W
					(ED55/ED66)
R368	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R370	1-216-089-00	METAL CHIP	47K	5%	1/10W
R371	1-216-037-00	METAL CHIP	330	5%	1/10W

Ref. No.	Part No.	Description			Remark
R372	1-216-037-00	METAL CHIP	330	5%	1/10W
R375	1-216-073-00	METAL CHIP	10K	5%	1/10W
R376	1-216-073-00	METAL CHIP	10K	5%	1/10W
R378	1-216-073-00	METAL CHIP	10K	5%	1/10W
					(EXCEPT ED66/ED88/ED95: MN, TH/EZ77)
R378	1-216-075-00	METAL CHIP	12K	5%	1/10W
					(ED66/ED88/ED95: MN, TH/EZ77)
R379	1-247-863-91	CARBON	22K	5%	1/4W
					(EXCEPT ED33MJ/ED66MJ/ED88MJ)
R379	1-249-433-11	CARBON	22K	5%	1/4W
					(ED33MJ/ED66MJ/ED88MJ)
R380	1-216-005-00	METAL CHIP	15	5%	1/10W
					(ED66/ED88/ED95: MN, TH/EZ77)
R380	1-216-308-00	METAL CHIP	4.7	5%	1/10W
					(EXCEPT ED66/ED88/ED95: MN, TH/EZ77)
R382	1-216-083-00	METAL CHIP	27K	5%	1/10W
					(ED66/ED88/ED95: MN, TH/EZ77)
R383	1-216-003-11	RES, CHIP	12	5%	1/10W
					(ED66/ED88/ED95: MN, TH/EZ77)
R384	1-216-089-00	METAL CHIP	47K	5%	1/10W
					(ED66/ED88/ED95: MN, TH/EZ77)
R401	1-249-411-11	CARBON	330	5%	1/4W
					(ED85/ED88/ED89/ED95/EZ66/EZ77)
R403	1-249-411-11	CARBON	330	5%	1/4W
					(ED66/ED88/ED89/ED95/EZ77)
R404	1-249-437-11	CARBON	47K	5%	1/4W
R405	1-249-437-11	CARBON	47K	5%	1/4W
R406	1-216-089-00	METAL CHIP	47K	5%	1/10W
R407	1-249-431-11	CARBON	15K	5%	1/4W
R408	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R409	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R410	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R411	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R412	1-249-425-11	CARBON	4.7K	5%	1/4W
R414	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R416	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R417	1-216-021-00	METAL CHIP	68	5%	1/10W
R418	1-216-077-91	RES, CHIP	15K	5%	1/10W
R419	1-216-089-00	METAL CHIP	47K	5%	1/10W
R451	1-249-413-11	CARBON	470	5%	1/4W
R452	1-216-049-00	METAL CHIP	1K	5%	1/10W
R453	1-216-049-00	METAL CHIP	1K	5%	1/10W
R454	1-216-049-00	METAL CHIP	1K	5%	1/10W
R455	1-249-417-11	CARBON	1K	5%	1/4W
R457	1-249-425-11	CARBON	4.7K	5%	1/4W
R458	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R459	1-249-435-11	CARBON	33K	5%	1/4W
R651	1-216-073-00	METAL CHIP	10K	5%	1/10W
R652	1-216-077-91	RES, CHIP	15K	5%	1/10W
R653	1-249-417-11	CARBON	1K	5%	1/4W
R701	1-247-807-31	CARBON	100	5%	1/4W
R703	1-216-113-00	METAL CHIP	470K	5%	1/10W
R704	1-212-893-00	FUSIBLE	330	5%	1/4W
R705	1-216-295-00	METAL CHIP	0	5%	1/10W
R706	1-216-295-00	METAL CHIP	0	5%	1/10W
R707	1-216-295-00	METAL CHIP	0	5%	1/10W
R711	1-249-413-11	CARBON	470	5%	1/4W
R712	1-249-413-11	CARBON	470	5%	1/4W
R719	1-216-073-00	METAL CHIP	10K	5%	1/10W
R720	1-216-089-00	METAL CHIP	47K	5%	1/10W
R721	1-216-049-00	METAL CHIP	1K	5%	1/10W
					(ED95: MN, TH/EZ77)

Ref. No.	Part No.	Description	Remark
R901	1-216-021-00	METAL CHIP 68 5% 1/10W	(ED85/ED88/ED89/ED95/EZ66/EZ77)
R902	1-216-021-00	METAL CHIP 68 5% 1/10W	(EXCEPT ED85/ED95MI/EZ66)
R903	1-216-041-00	METAL CHIP 470 5% 1/10W	(EZ66/EZ77)
R904	1-216-041-00	METAL CHIP 470 5% 1/10W	(EZ66/EZ77)
R905	1-249-413-11	CARBON 470 5% 1/4W	(ED88MJ/EZ11/EZ22/EZ44/EZ77)
R906	1-249-413-11	CARBON 470 5% 1/4W	(ED88MJ/EZ77)
R907	1-216-097-91	RES, CHIP 100K 5% 1/10W	(ED85/ED88/ED89/ED95/EZ66/EZ77)
R908	1-216-097-91	RES, CHIP 100K 5% 1/10W	(ED85/ED88/ED89/ED95/EZ66/EZ77)
R909	1-216-097-91	RES, CHIP 100K 5% 1/10W	(ED88/ED89/ED95: MN, TH/EZ77)
R910	1-216-097-91	RES, CHIP 100K 5% 1/10W	(ED88/ED89/ED95: MN, TH/EZ77)
R911	1-216-023-00	METAL CHIP 82 5% 1/10W	(ED85/ED88/ED89/ED95/EZ66/EZ77)
R913	1-249-408-11	CARBON 180 5% 1/4W	(ED85/ED88/ED89/ED95/EZ66/EZ77)
R914	1-216-025-00	METAL CHIP 100 5% 1/10W	(ED85/ED88/ED89/ED95/EZ66/EZ77)
R915	1-216-041-00	METAL CHIP 470 5% 1/10W	
R916	1-216-041-00	METAL CHIP 470 5% 1/10W	(ED85/ED88/ED89/ED95/EZ66/EZ77)
R917	1-216-041-00	METAL CHIP 470 5% 1/10W	(ED85/ED88/ED89/ED95/EZ66/EZ77)
R918	1-216-041-00	METAL CHIP 470 5% 1/10W	(ED85/ED88/ED89/ED95/EZ66/EZ77)
R919	1-249-408-11	CARBON 180 5% 1/4W	
R920	1-249-407-11	CARBON 150 5% 1/4W	
R921	1-216-023-00	METAL CHIP 82 5% 1/10W	(ED15/ED25/ED33/ED39/ED55/ED66/EZ11/EZ22/EZ44)
R922	1-216-025-91	RES, CHIP 100 5% 1/10W	
R923	1-249-407-11	CARBON 150 5% 1/4W	(ED85/ED88/ED89/ED95/EZ66/EZ77)
R924	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R925	1-216-025-91	RES, CHIP 100 5% 1/10W	
R926	1-216-025-91	RES, CHIP 100 5% 1/10W	(ED85/ED88/ED89/ED95/EZ66/EZ77)
R927	1-249-425-11	CARBON 4.7K 5% 1/4W	(ED85/ED88/ED89/ED95/EZ66/EZ77)
		< SWITCH >	
S101	1-762-108-11	SWITCH, PUSH (1 KEY) (REC PROOF)	
S102	1-771-155-11	SWITCH, ROTARY (CAM ENCODER)	
S401	1-771-574-21	SWITCH, TACTILE (COLOR SYSTEM)	
S402	1-771-574-21	SWITCH, TACTILE (SYNCHRO REC)	(ED85/ED88/ED89/ED95/EZ66/EZ77)
S403	1-771-574-21	SWITCH, TACTILE (SP/LP)	
S404	1-771-574-21	SWITCH, TACTILE (PROGRAM/TRACKING +)	
S405	1-771-574-21	SWITCH, TACTILE	(ONE TOUCH TUNING/RF CANNEL)
S406	1-771-574-21	SWITCH, TACTILE (PROGRAM/TRACKING -)	
S409	1-771-574-21	SWITCH, TACTILE (R^2)	(ED66/ED88/ED89/ED95/EZ77)

Ref. No.	Part No.	Description	Remark
		< TRANSFORMER >	
T371	1-423-413-11	TRANSFORMER, BIAS OSCILLATION	(ED66/ED88/ED95: MN, TH/EZ77)
T371	1-423-414-11	TRANSFORMER, BIAS OSCILLATION	(EXCEPT ED66/ED88/ED95: MN, TH/EZ77)
T372	1-423-415-11	TRANSFORMER, BIAS OSCILLATION	(ED66/ED88/ED95: MN, TH/EZ77)
		< TUNER >	
TU701	1-693-415-12	TUNER, MOD/IF SOLID TYPE	(EXCEPT ED95MI/EZ11/EZ22/EZ44/EZ66/EZ77)
TU701	1-693-416-11	TUNER, MOD/IF SOLID TYPE	(EZ11/EZ22/EZ44/EZ66/EZ77)
TU702	1-693-414-11	TUNER, MOD/IF SOLID TYPE (ED95MI)	
		< VIBRATOR >	
X101	1-767-855-11	VIBRATOR, CRYSTAL (10MHz)	
X102	1-579-463-11	VIBRATOR, CRYSTAL (32.768kHz)	
X151	1-767-856-11	VIBRATOR, CRYSTAL (17.734475MHz)	
X152	1-767-857-11	VIBRATOR, CRYSTAL (14.31818MHz)	(ED95MI)
X201	1-760-708-11	VIBRATOR, CRYSSTAL (4.433619MHz)	
* X202	1-760-709-11	VIBRATOR, CRYSTAL (3.579693MHz)	(EXCEPT EZ11/EZ22/EZ44/EZ66)

*	A-6713-654-A	MF-321 BOARD, COMPLETE	(ED33MJ/ED66MJ/ED88MJ)
*	A-6713-662-A	MF-321 BOARD, COMPLETE	(EXCEPT ED33MJ/ED66MJ/ED88MJ)
		**********	(Ref. No. 1,000 Series)
		< CAPACITOR >	
C501	1-163-038-00	CERAMIC CHIP 0.1uF	25V
		< CONNECTOR >	
CN501	1-784-447-11	CONNECTOR, FFC/FPC 5P	
		< IC >	
IC501	8-749-011-05	IC GP1U28X	
		< SWITCH >	
S501	1-762-196-21	SWITCH, TACT (I/⏻)	

*	A-6791-591-A	NK-11 BOARD, COMPLETE (ED95/EZ77NZ)	
		**********	(Ref. No. 3,000 Series)
		< CAPACITOR >	
C003	1-107-823-11	CERAMIC CHIP 0.47uF 10.00%	16V
C004	1-107-823-11	CERAMIC CHIP 0.47uF 10.00%	16V
C005	1-107-823-11	CERAMIC CHIP 0.47uF 10.00%	16V
C006	1-107-823-11	CERAMIC CHIP 0.47uF 10.00%	16V
C007	1-107-823-11	CERAMIC CHIP 0.47uF 10.00%	16V
C008	1-107-823-11	CERAMIC CHIP 0.47uF 10.00%	16V
C009	1-107-823-11	CERAMIC CHIP 0.47uF 10.00%	16V
C010	1-107-823-11	CERAMIC CHIP 0.47uF 10.00%	16V
C011	1-164-232-11	CERAMIC CHIP 0.01uF	50V
C012	1-164-232-11	CERAMIC CHIP 0.01uF	50V

NK-11 | POWER BLOCK (PSM17-501) | SE-103

Ref. No.	Part No.	Description			Remark
C013	1-163-243-11	CERAMIC CHIP	47PF	5.00%	50V
C014	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C015	1-163-231-11	CERAMIC CHIP	15PF	5.00%	50V
C016	1-163-233-11	CERAMIC CHIP	18PF	5.00%	50V
C017	1-110-501-11	CERAMIC CHIP	0.33uF	10.00%	16V
C018	1-163-989-11	CERAMIC CHIP	0.033uF	10%	25V
C019	1-109-982-11	CERAMIC CHIP	1uF	10.00%	10V
C020	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C021	1-113-642-11	TANTALUM CHIP	47uF	10.00%	10V
C022	1-107-823-11	CERAMIC CHIP	0.47uF	10.00%	16V
C023	1-163-243-11	CERAMIC CHIP	47PF	5.00%	50V
		< CONNECTOR >			
* CN001	1-691-183-11	CONNECTOR (BOARD TO BOARD) 13P			
		< DIODE >			
D001	8-719-066-72	DIODE BB135			
		< FERRITE BEAD >			
FB001	1-543-813-21	FERRITE 0uH			
FB002	1-543-813-21	FERRITE 0uH			
FB003	1-543-813-21	FERRITE 0uH			
		< IC >			
IC001	8-759-526-43	IC TDA9874H/V1, 118			
		< COIL >			
L006	1-412-945-11	INDUCTOR	3.3uH		
		< IC LINK >			
⚠PS001	1-576-122-21	LINK, IC (0.4A)			
		< RESISTOR >			
R001	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R002	1-216-073-00	METAL CHIP	10K	5%	1/10W
R003	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R004	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R005	1-216-041-00	METAL CHIP	470	5%	1/10W
R006	1-216-041-00	METAL CHIP	470	5%	1/10W
R007	1-216-001-00	METAL CHIP	10	5%	1/10W
R008	1-216-001-00	METAL CHIP	10	5%	1/10W
R009	1-216-001-00	METAL CHIP	10	5%	1/10W
R010	1-216-001-00	METAL CHIP	10	5%	1/10W
R011	1-216-304-11	METAL CHIP	3.3	5%	1/10W
R012	1-216-304-11	METAL CHIP	3.3	5%	1/10W
R013	1-216-001-00	METAL CHIP	10	5%	1/10W
R014	1-216-295-00	METAL CHIP	0	5%	1/10W
R015	1-216-295-00	METAL CHIP	0	5%	1/10W
R016	1-216-033-00	METAL CHIP	220	5%	1/10W
		< VIBRATOR >			
X001	1-767-897-12	VIBRATOR, CRYSTAL (24.576MHz)			

Ref. No.	Part No.	Description			Remark
*	1-468-495-11	POWER BLOCK (PSM17-501)			
		**********			
		(Ref. No. 4,000 Series)			
	3-055-090-21	CASE (MAIN), POWER SHIELD			
		(ED33MJ/ED66MJ/ED88MJ)			
	3-055-091-21	CASE (LID), POWER SHIELD			
		(ED33MJ/ED66MJ/ED88MJ)			
		< DIODE >			
BD1	8-719-051-93	DIODE DF06M-6031			
		< CAPACITOR >			
C3	1-113-898-11	CERAMIC	330PF	10%	250V
C4	1-113-898-11	CERAMIC	330PF	10%	250V
C6	1-113-898-11	CERAMIC	330PF	10%	250V
C12	1-111-087-11	ELECT	330uF	20%	35V
		< CONNECTOR >			
* CN101	1-580-230-11	PIN, CONNECTOR (PC BOARD) 2P			
CN102	1-778-675-21	CONNECTOR (BOARD TO BOARD) 19P			
CN103	1-784-484-11	CONNECTOR, FFC/FPC 5P			
		< DIODE >			
D4	8-719-073-18	DIODE S3L20UF34			
ZD1	8-719-059-24	DIODE P6KE200A			
		< FUSE >			
⚠F1	1-532-388-31	FUSE, TIME-LAG (2A/250V)			
		< FUSE HOLDER >			
FH1	1-533-223-11	CLIP, FUSE			
FH2	1-533-223-11	CLIP, FUSE			
		< PHOTO COUPLER >			
PC1	8-749-010-64	PHOTO COUPLER PC123F2			
		< IC LINK >			
⚠PS1	1-533-586-31	LINK, IC (315mA)			
⚠PS2	1-533-593-11	LINK, IC (2A)			
⚠PS3	1-533-590-31	LINK, IC (1A)			

*	A-6713-669-A	SE-103 BOARD, COMPLETE (ED39/ED89)			
		**********			
		(Ref. No. 2,000 Series)			
		< CAPACITOR >			
C951	1-163-259-91	CERAMIC CHIP	220PF	5.00%	50V
C952	1-124-257-00	ELECT	2.2uF	20%	50V
C953	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C954	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C955	1-109-982-11	CERAMIC CHIP	1uF	10.00%	10V
C956	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C957	1-163-259-91	CERAMIC CHIP	220PF	5.00%	50V
C958	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C959	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C960	1-163-255-11	CERAMIC CHIP	150PF	5.00%	50V

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description			Remark
C961	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C963	1-163-135-00	CERAMIC CHIP	560PF	5%	50V
C964	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C965	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C967	1-126-157-11	ELECT	10uF	20%	16V
C968	1-107-823-11	CERAMIC CHIP	0.47uF	10.00%	16V
C973	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C974	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C975	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C976	1-126-157-11	ELECT	10uF	20%	16V
		< CONNECTOR >			
* CN951	1-691-179-11	CONNECTOR (BOARD TO BOARD) 9P			
		< IC >			
IC951	8-759-438-17	IC LA7337			
		< JUMPER RESISTOR >			
JR901	1-216-295-00	METAL CHIP	0	5%	1/10W
JR902	1-216-295-00	METAL CHIP	0	5%	1/10W
JR903	1-216-296-00	METAL CHIP	0	5%	1/8W
JR904	1-216-295-00	METAL CHIP	0	5%	1/10W
		< COIL >			
L951	1-414-933-21	INDUCTOR	6.8uH		
L952	1-414-945-21	INDUCTOR	27uH		
L956	1-414-934-21	INDUCTOR	10uH		
		< TRANSISTOR >			
Q953	8-729-424-08	TRANSISTOR	MUN2111T1		
Q954	8-729-010-29	TRANSISTOR	MSD601-RST1		
		< RESISTOR >			
R951	1-216-085-00	METAL CHIP	33K	5%	1/10W
R952	1-216-091-00	METAL CHIP	56K	5%	1/10W
R953	1-216-083-00	METAL CHIP	27K	5%	1/10W
R954	1-216-081-00	METAL CHIP	22K	5%	1/10W
R955	1-216-295-00	METAL CHIP	0	5%	1/10W
R956	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R957	1-216-089-00	METAL CHIP	47K	5%	1/10W
R960	1-216-085-00	METAL CHIP	33K	5%	1/10W
R961	1-216-083-00	METAL CHIP	27K	5%	1/10W
R966	1-216-089-00	METAL CHIP	47K	5%	1/10W
R968	1-216-085-00	METAL CHIP	33K	5%	1/10W
R969	1-216-025-91	RES, CHIP	100	5%	1/10W
R973	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R974	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R980	1-216-025-91	RES, CHIP	100	5%	1/10W
R982	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R983	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R985	1-216-295-00	METAL CHIP	0	5%	1/10W

MISCELLANEOUS
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7	1-792-428-11	CABLE, FLAT (FDS-6)
14	1-792-427-11	CABLE, FLAT (FMF-39)
19	1-792-426-11	CABLE, FLAT (FKK-3)

Ref. No.	Part No.	Description	Remark
20	1-792-430-11	CABLE, FLAT (FFJ-3)	(ED55/ED66/ED88/ED89/ED95/EZ66/EZ77)
54	1-792-429-11	CABLE, FLAT (FMD-15)	(ED15/ED25/ED33/ED39/EZ11/EZ22)
54	1-792-431-11	CABLE, FLAT (FMD-16) (ED55/ED66/ED85/	ED88/ED89/ED95/EZ44/EZ66/EZ77)
⚠57	1-777-850-51	CORD, POWER	(EXCEPT EZ11/EZ22/EZ44/EZ66/EZ77)
⚠57	1-777-855-42	CORD, POWER (EZ11/EZ22/EZ44/EZ66/EZ77)	
59	1-792-425-11	CABLE, FLAT (FAC-7)	
704	1-500-144-11	HEAD, FE	
721	A-6775-791-A	HEAD BLOCK ASSY, ACE FFC	
768	1-772-360-11	DRUM ASSY, DZH-89D-R	(ED15/ED25/ED33/ED39/EZ11/EZ22)
768	8-839-048-51	DRUM ASSY, DZH-0A1A/Z-RP	(ED85/ED88/ED89/ED95/EZ66/EZ77)
768	8-839-050-51	DRUM ASSY, DZH-0A3A/Z-RP	(ED55/ED66/EZ44)
M902	1-698-971-11	MOTOR, DC (CAPSTAN)	
M903	X-3947-577-1	MOTOR ASSY, CAM	

****
HARDWARE LIST
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#1	7-685-648-79	SCREW +BVTP 3X12 TYPE2 IT-3
#2	7-682-147-01	SCREW +P 3X6
#3	7-685-646-79	SCREW +BVTP 3X8 TYPE2 IT-3
#4	7-685-133-19	SCREW (DIA. 2.6) (IT3B)

ACCESSORIES & PACKING MATERIALS
****

	1-418-869-11	COMMANDER, STANDARD (RMT-V296) (EZ22/EZ44)
	1-418-869-21	COMMANDER, STANDARD (RMT-V296A) (EZ66)
	1-418-869-31	COMMANDER, STANDARD (RMT-V296B) (EZ77)
	1-418-871-11	COMMANDER, STANDARD (RMT-V298) (EZ11)
	1-418-871-21	COMMANDER, STANDARD (RMT-V298A) (ED15/ED25/ED33/ED39/ED55/ED85)
	1-418-871-31	COMMANDER, STANDARD (RMT-V298B) (ED66/ED88/ED95: MN, TH)
	1-418-871-41	COMMANDER, STANDARD (RMT-V298C) (ED89)
	1-418-871-51	COMMANDER, STANDARD (RMT-V298D) (ED95MI)
⚠	1-569-008-21	ADAPTOR, CONVERSION 2P (ED33: ME, MJ/ ED39/ED66: ME, MJ/ED88: ME, MJ/ED89)
	1-696-593-11	CORD, CONNECTION (PAL) (1.5m)
⚠	1-770-019-11	ADAPTOR, CONVERSION PLUG 3P (ED95MI)
	3-058-424-11	MANUAL, INSTRUCTION (ENGLISH) (ED95MI)
	3-058-424-21	MANUAL, INSTRUCTION (TRADITIONAL CHINESE) (ED95MI)
	3-058-425-11	MANUAL, INSTRUCTION (ENGLISH) (ED95: MN, TH)
	3-058-425-21	MANUAL, INSTRUCTION (THAI) (ED95TH)
	3-058-426-11	MANUAL, INSTRUCTION (ENGLISH) (EZ66/EZ77)

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
	3-058-427-11	MANUAL, INSTRUCTION (ENGLISH)	(ED55/ED85)
	3-058-427-21	MANUAL, INSTRUCTION (THAI) (ED85TH)	
	3-058-427-31	MANUAL, INSTRUCTION (RUSSIAN)	(ED55/ED85PS)
	3-058-428-11	MANUAL, INSTRUCTION (ENGLISH)	(ED39/ED89)
	3-058-428-21	MANUAL, INSTRUCTION (ARABIC)	(ED39/ED89)
	3-058-428-31	MANUAL, INSTRUCTION (FRENCH)	(ED39/ED89)
	3-058-429-11	MANUAL, INSTRUCTION (ENGLISH)	(ED66/ED88)
	3-058-429-21	MANUAL, INSTRUCTION (ARABIC)	(ED66/ED88)
	3-058-429-31	MANUAL, INSTRUCTION (PERSIAN)	(ED66: MJ, SG/ED88: MJ, SG)
	3-058-429-41	MANUAL, INSTRUCTION (URDU)	(ED66: MJ, SG/ED88: MJ, SG)
	3-058-429-51	MANUAL, INSTRUCTION (RUSSIAN)	(ED66SG/ED88SG)
	3-058-431-11	MANUAL, INSTRUCTION (ENGLISH)	(ED15/ED25/ED33)
	3-058-431-21	MANUAL, INSTRUCTION (ARABIC) (ED33)	
	3-058-431-31	MANUAL, INSTRUCTION (THAI) (ED25TH)	
	3-058-431-41	MANUAL, INSTRUCTION (PERSIAN)	(ED33: MJ, SG)
	3-058-431-51	MANUAL, INSTRUCTION (URDU)	(ED33: MJ, SG)
	3-058-431-61	MANUAL, INSTRUCTION (RUSSIAN)	(ED15/ED33SG)
	3-058-432-11	MANUAL, INSTRUCTION (ENGLISH)	(EZ11/EZ22/EZ44)
	3-709-128-01	COVER, BATTERY	(for RMT-V296/V296A/V296B) (EZ22/EZ44/EZ66/EZ77)
	3-709-129-01	COVER, BATTERY	(for RMT-V298/V298A/V298B/V298C/V298D) (EXCEPT EZ22/EZ44/EZ66/EZ77)

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